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Division of Emergency Medical Services

2001 Annual Report to the King County Council

September 2001

Preface

I am very pleased to present the annual Emergency Medical Services (EMS) Division report to the King County Council. The recommendations for an annual report on specific subjects originated with the EMS Financial Planning Task Force more than three years ago. Since then, however, the EMS Division has enlarged the document beyond the scope originally recommended. This year, for the first time in the history of the EMS Division, the annual report truly captures the scope of activities across the entire Division and profiles the activities of emergency medical services across the entire region.

This is an important and decisive year for the regional EMS/Medic One system. The EMS 2002 Task Force recommendations were completed on time, after nearly three years of intense work by elected officials and representatives from cities, fire districts, and the King County Council. The EMS 2002 Strategic Plan Update includes both the operational and financial recommendations which were forwarded and approved by the King County Council and form the core of the next EMS levy funding period from 2002-2007. Two EMS Task Forces thoughtfully considered the difficult question of how to financially support an excellent regional EMS system. After careful review of the operational aspects of EMS, both Task Forces supported the regional approach to EMS that has existed here for 30 years. The regional approach ensures that citizens will continue to get a standard, uniform response and excellent pre-hospital care at home, work, or anywhere across the county.

The financial structure supporting EMS was also carefully examined at the task force level. Twelve different methods of funding were reviewed and largely rejected by these two task forces, either because the amount of funding was too small or because significant changes in Washington State law were needed to implement the new funding source. In the end, the EMS 2002 Task Force recommended that a return to a levy was needed, and that the levy represented the primary mechanism currently provided by the Washington State Legislature to help fund regional EMS systems in the state.

The EMS 2001 Annual Report summarizes the EMS 2002 Task Force recommendations and the full text is available online through the website for Public Health - Seattle & King County (www.metrokc.gov/health/ems). The levy rate will authorize up to $.25 per $1,000 of assessed property value, a decrease from the $.29 rate approved in 1998. Careful financial and workload projections done during the Task Force process indicate that this amount will maintain existing paramedic services and add paramedic services as needed in Shoreline (2002), Bothell (2002), the Issaquah area (2003), Vashon Island (2002), and South King County (2004, 2006). Basic Life Support funding for the 34 fire departments, frozen at 1997 levels for the past four years, will have modest annual increases. EMS Division support programs and strategic initiatives will continue, particularly focused on dispatch initiatives designed to help manage the rate of growth in calls and create new options for dispatchers and Emergency Medical Technicians (EMTs). This plan will go before the voters in November of this year for approval.

The EMS 2001 Annual Report continues the region-wide statistical reporting that began four years ago. Regional reporting like this requires close cooperation on data issues between the Seattle Fire Department and the EMS Division. This relationship has grown closer and more

productive over the past few years. This year certain statistical indicators have been highlighted for special emphasis, including Advanced Life Support (ALS) Call Volumes, Types of Patient Transport, Pediatric Asthma, and Citizen CPR and Cardiac Arrest Survival.

I especially recommend reviewing the EMS Division Programs and Activities Section which describes the richness and variety of activities being carried out at the regional level. These programs support the entire range of EMS activities, from injury prevention and public education, to CPR training in schools, to dispatcher training and continuing education, to emergency medical technician training and education, to the provision of paramedic services in South King County, to the collection and analysis of medical data used in planning and implementing efficient paramedic services, to highlight just a few program areas.

The EMS/Medic One system has numerous challenges to overcome both this year and over the next several years. However, the EMS 2002 Strategic Plan Update provides strong policy and financial direction both for the EMS Division and the entire region. This report describes the type of programs and activities that will help resolve the regional EMS challenges and assure continued provision of high quality pre-hospital medical care to the citizens of King County.

Dr. Alonzo L. Plough, Director and Health Officer
Public Health - Seattle & King County

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Introduction

The **Emergency Medical Services (EMS)/Medic One system** provides an internationally regarded regional service to the citizens of Seattle and King County. It operates in a coordinated partnership between King County, cities, fire districts, private ambulance companies, hospitals, and others involved in providing high quality pre-hospital emergency medical care. The EMS response system is tiered to assure that 911 calls receive effective medical care by the most appropriate health care provider. This system model originated in the City of Seattle and has been in place in the region for almost 30 years.

Calls to 911 are received and triaged by trained dispatchers in eight dispatch centers throughout the county. Basic Life Support (BLS) services are the first level of response and are provided by fire fighters trained as Emergency Medical Technicians (EMTs) in 34 fire districts and departments. Advanced Life Support (ALS) services are provided by six paramedic agencies that respond to patients with more serious illnesses or injuries.

This document represents the **third annual EMS Division report** to the King County Council. The EMS 2001 Annual Report includes a variety of standardized operational measures for fire departments and paramedic providers, and also discusses a number of other important regional issues that influence the delivery of EMS care in this region. These include:

- Summary of the recommendations made by the EMS 2002 Task Force.
- Review of the regional EMS system statistics for the year 2000, including workloads, types of calls, and response times.
- Status report on the progress and effectiveness of current EMS programs, including the strategic initiatives outlined in the EMS 2002 Strategic Plan Update.
- Status report on the financial, operational, and planning of EMS in the Seattle-King County region, including financial information on revenue assumptions and expenditures with projections into the year 2002.

The EMS 2001 Annual Report is organized into three main sections:

- Part I: Summary Recommendations of the EMS 2002 Task Force.
- Part II: Status of EMS Division Programs and Activities.
- Part III: EMS Funding and the 2000-2001 Financial Plan.

Summary Report

EMS 2002 Task Force: Following the failure of the EMS levy in 1997, two regional task forces were formed by the King County Council and asked to examine the Emergency Medical Services (EMS) / Medic One system. The **EMS Financial Planning Task Force** was formed in March 1998 and reviewed in detail both operational and financial components of the EMS/ Medic One system over a period of 18 months. The task force, however, was unable to reach consensus on a single regional funding mechanism, and in March 2000, the **EMS 2002 Task Force** was formed. The task force submitted its findings to the King County Council in April 2001 in the form of the EMS 2002 Strategic Plan Update. It includes the following major proposals:

- Development of a financial plan that includes funding for an anticipated additional 4.3 Advanced Life Support (ALS) paramedic units.
- Continuation of support for Basic Life Support (BLS) services provided by fire departments, and regional operational and medical support programs.
- Provision for continued emphasis on EMS strategic initiatives designed to improve efficiency and cost-effectiveness.
- Support of a six-year EMS levy at $.25 per $1,000 assessed property value.

EMS Program and Pilot Project Highlights: The EMS Division is dedicated to increasing survival and reducing disability from out-of-hospital emergencies in King County. This is achieved through strong partnerships with other agencies and innovative leadership in the emergency medical field. All EMS Division programs are designed to contribute to this effort. The following identifies a few EMS program highlights:

- The **ALS Dispatch Triage Guidelines Revisions project** was implemented to increase the efficiency of the EMS system by reducing the rate of growth of ALS calls and decreasing unnecessary ALS responses. Comprehensive revisions to the Criteria Based Dispatch Guidelines were completed in August, 2000. Evaluation of the impact of the changes on ALS call volume, BLS requests for ALS from scene and ALS Code Green rates will be conducted later this year.

- The **Regional Data Collection (RDC) project** is an ongoing countywide effort to implement a system that gives EMS providers the ability to complete an electronic version of the Medical Incident Report Form (MIRF) and electronically transfer that report directly to the regional EMS database. Phase I is expected to be complete in December 2001, including testing of data transfer from the six participating agencies and thorough analysis of the system design.

Year 2000 Statistics: The **2000 EMS Statistics Summary** indicates that although the type of responses by both ALS and BLS remains largely unchanged over time, in the past year, the rate of increase of ALS responses has decreased dramatically to equal the rate of population growth. The 2001 Annual Report highlights pediatric asthma, the impact of CPR training in cardiac arrest survival, and variation in BLS and ALS transport patterns throughout King County.

Part I: Summary Recommendations of the EMS 2002 Task Force

Background

Following the failure of the EMS levy in 1997, two regional task forces were asked by the King County Council to examine the Emergency Medical Services (EMS) / Medic One system. Both the EMS Financial Planning Task Force and the EMS 2002 Task Force included elected representatives and appointees from cities and unincorporated areas across the King County region.

For nearly three years, the two groups met on a regular basis to review in detail the EMS system design and funding mechanism. They reviewed numerous potential funding options that could provide long-term financial support for this system, and developed consensus around the future funding and operational plans. The two task forces again validated the medical effectiveness and efficiency of the regional EMS model that began almost 30 years ago in the City of Seattle.

The results of these productive regional discussions are detailed in the EMS 2002 Strategic Plan Update. The document was submitted to the King County Council in April 2001 and includes the following major proposals:

- Continuation of support for Basic Life Support (BLS) services provided by fire departments, and regional operational and medical support programs.
- Development of a financial plan that includes funding for an anticipated additional 4.3 paramedic units to be located in all regions of King County.
- Provision for continued emphasis on EMS strategic initiatives designed to improve efficiency and cost-effectiveness with focus on the role of dispatch in managing growth in EMS calls.
- Support of a six-year EMS levy at $.25 per $1,000 assessed property value.

Updating the EMS 1998-2003 Strategic Plan

The EMS 2002 Task Force was responsible for updating the EMS 1998-2003 Strategic Plan. The plan identifies three global directives to impact the increasing demand for EMS services in King County. These directives are as follows:

- Enhance existing programs, add new programs to meet emerging community needs, and maintain or improve current standards of patient care.
- Manage the rate of growth in the demand for EMS services.
- Use existing resources more efficiently to improve operations of the system and help contain costs.

The EMS 1998-2003 Strategic Plan detailed twelve Strategic Initiatives to address the three major directions identified in the plan. Some of these initiatives have already been incorporated into ongoing operations, while others await final evaluation and measurable outcomes are not yet

available. The Strategic Initiatives are detailed in Part II: EMS Programs and Activities. It is anticipated that recommendations regarding these initiatives will be available by the original target timeline of 2003.

EMS 2002 Task Force Recommendations

The EMS 2002 Task Force recognized that the regional EMS/Medic One system advocates for the provision of consistent and competent medical care across all provider areas. Each paramedic agency and basic life support provider operates individually, and yet provides care to the patient within a "seamless" system. This is accomplished by maintaining an integrated regional network of basic and advanced life support services, making regional delivery and funding decisions cooperatively from a system-wide perspective, and developing strategic initiatives that provide greater efficiencies within the system.

The following is a summary of the EMS 2002 Task Force Recommendations, including recommendations for new Basic Life Support (BLS), Advanced Life Support (ALS), Regional Programs, and future funding mechanisms. Copies of the completed document are available upon request (please reference Appendix H: EMS Contact Information on page 53).

A. Basic Life Support (BLS):

The EMS 2002 Task Force recommends:

- A portion of the EMS regional funding will continue to be allocated to BLS to assure uniform and standardized medical BLS care, and enhance BLS services to reduce the impact on advanced life support resources.
- The current BLS allocation formula is a fair and equitable method of distribution of BLS resources.
- The funding for BLS distribution will increase by the local-area Consumer Price Index.

B. Advanced Life Support (ALS):

Based on current and projected call volume, population forecasts, and the anticipated effects from the 1998-2003 EMS Strategic Initiatives, the EMS 2002 Task Force recommends:

- The provision of 4.3 additional or expanded units in the 2002-2007 period.
- ALS standard funding for the 2002 funding period set at 100% of the average provider standard unit cost or $1,207,354 for a two-paramedic, 24-hour, full-time ALS unit for the first year.
- An Emergency Medical Technician/Paramedic (EMT-P) unit and a two-paramedic, 12-hour, half-time ALS unit funding for 2002 set at 50% of the full time unit or $603,677 for the first year.
- The annual increase in the funding amount for an ALS unit shall increase by the local-area Consumer Price Index.
- The funding level will be re-evaluated periodically, based on available and sufficient funding, to alleviate any dramatic increase in provider contribution.

C. Support for Regional Programs:

The EMS 2002 Task Force recommends:

- Continuation of the current operating structure of regional programs.
- The annual increase in regional programs funding shall increase by the local-area Consumer Price Index.

D. 2002 Strategic Initiatives:

The EMS 2002 Task Force recommends the following three major program areas as appropriate for future initiatives and system improvements:

- Dispatch: Development of initiatives that invest in the training and education of 911 dispatchers and provide continued quality improvements to enhance the effectiveness and efficiency of EMS dispatch.
- Medical/system data collection and evaluation: Continuation of the effort to collect medical data via electronic means to improve the accuracy and completeness of the data and allow access to the aggregate data by individual providers.
- Injury Prevention/Public Education: Continuation of injury prevention and public education activities (e.g. fall prevention) to assist in the management of rate of growth in demand for EMS services.

E. Future Funding of the EMS/ Medic One Program

The EMS system is funded by a complex combination of regional and local funding sources. ALS and BLS provider contributions continue to be a vital element of the proposed funding package. Historically, the EMS-dedicated levy has been the primary resource for ALS and Regional programs, whereas BLS has been supported by a combination of city and fire district operating revenues supplemented with regional EMS levy funding.

The EMS 2002 Task Force recommends:

- Continuation with the six-year dedicated property tax levy for Advanced and Basic Life Support Services and Regional Services, based on 1) valuing the EMS service as an integrated regional network of basic and advanced life support provided by many agencies, 2) an extensive review of alternative funding options done by the EMS Financial Planning Task Force, and 3) not finding another stable, long-term funding solution, the EMS 2002 Task Force supports.
- An EMS statutory levy rate of 25 cents per $1,000 of assessed value for the six-year funding period 2002-2007 in combination with provider contributions.

Part II: Status of EMS Division Programs and Activities

Introduction

The Emergency Medical Services (EMS) Division is dedicated to increasing survival and reducing disability from out-of-hospital emergencies in King County by providing the highest quality of patient care in a pre-hospital setting. This is achieved through strong partnerships with other agencies and innovative leadership in the emergency medical field. All EMS Division programs that are developed and implemented are designed to contribute to this effort. This section summarizes the major EMS Division programs and activities. Projects and programs that are identified as Strategic Initiatives in the EMS 1998-2003 Strategic Plan are followed with an asterisk (*). A summary table of the strategic initiatives can be found at the end of this section on page 25.

A. EMS Program and Pilot Project Highlights

Appropriate Destination and Patient Treatment Project (ADAPT) (*)

The EMS 1998-2003 Strategic Plan identifies the development of an array of transport destinations as a strategy for utilizing existing EMS resources more efficiently. The Appropriate Destination and Patient Treatment (ADAPT) project is designed to respond to this initiative by offering patients who call 911 for emergency medical services an opportunity to receive medical treatment appropriate to their required level of care at a local clinic.

The ADAPT project, operating in the Kent Fire and Life Safety and Maple Valley Fire & Life Safety service areas, completed a six-month period of referral of eligible patients to local clinics from August 1, 2000 through January 31, 2001. Eligibility was established following an evaluation at the scene by emergency medical personnel. Selected patients who met specific criteria ('non-urgent' in severity and diagnosed with specified trauma or medical codes) were then given the option to receive medical treatment at a local participating clinic.

In evaluation of the ADAPT project, there are three areas of particular interest. They include patient medical outcome when referred to a local area clinic, patient satisfaction with treatment received, and development of an acceptable process for the submission of insurance claims. The ADAPT project reported no adverse outcomes when patients were referred to an urgent care clinic for treatment.

Of those patients contacted for follow-up, all patients seen at an ADAPT clinic were fully satisfied with their treatment. Most patients contacted stated that they were seen in under two hours and all were seen in under four hours. Finally, the majority of the patient insurance organizations reimbursed the clinics at a reasonable and expected rate. This does not imply that guarantees are in place for payment, but that claims for referrals to urgent care clinics are not universally rejected by insurance companies. This issue needs continued evaluation.

The ADAPT Oversight Committee met on March 7, 2001 to discuss the results and made the following recommendations: 1) continue to utilize the ADAPT protocols in the identified service areas, 2) evaluate more specifically the impact of costs on patients, and 3) reconvene the Oversight Committee at the end of 2001.

**Note: The ADAPT project was selected for presentation at the 19th Annual EMS Today Conference in Baltimore, MD on March 15, 2001 and won the award for best oral presentation.

BLS/ EMT Training and Education Program

The Basic Life Support (BLS) Training Section of the EMS Division provides initial training, continuing education, and recertification for 3,500 Emergency Medical Technicians (EMTs) and First Responders in King County. In addition, the section serves as the liaison between the State Department of Health and 34 fire/EMS agencies in King County. In this capacity, the section provides the EMS agencies all pertinent information from the State regarding continuing education, recertification and regulatory and policy changes. The BLS Training Section is directed by a Medical Services Officer from King County Medic One and is staffed by two full-time curriculum developers, a training program manager, and an administrative assistant.

The following **BLS Training projects** are underway for 2001:

Competency Based Training (CBT): Each year, the State of Washington mandates EMTs to complete ten hours of continuing medical education. The topics are chosen in advance and five modules of curriculum are developed by the BLS Training Section each year, for a total of 15 modules in a three-year recertification cycle. The curriculum is available both in hard copy and a web-based format. The web format was developed for the first time in 2001, with the assistance of grant money from the Medic One Foundation. All five modules are currently available online and three large fire departments are testing the program. The online curricula are designed for EMTs to study the material in an interactive format, and then take online cognitive tests. The test results are automatically stored in an electronic database for ease of record keeping.

The BLS Training Section sponsors twelve annual workshops to certify CBT instructors to teach the curriculum to personnel in their individual fire agencies. The 2002 Curriculum modules have been completed and distributed to the fire departments. The topics for 2002 are Hard Tissue Injuries, Psychiatric Emergencies, Respiratory Emergencies, Environmental Emergencies, and Obstetric/Gynecologic Emergencies.

EMT Training Classes: The BLS Training Section offers two initial EMT training courses each year, in the spring and fall. These classes are open to personnel from the 34 King County fire agencies. Each course consists of 120 hours of classroom and practical instruction as well as 10 hours of hospital observation time. The courses utilize the State Department of Health curriculum. This year 120 EMTs completed the EMT basic course.

Early Defibrillation Program: The early defibrillation program, including data collection, is the responsibility of the BLS Section Manager. The program provides initial defibrillation training, continuing medical education for defibrillation technicians, data collection, and quality assurance for out-of-hospital cardiac arrests in King County, and protocol development and evaluation of defibrillation equipment. The section employs two part time employees to assist with this activity.

Patient Care Guidelines: The State of Washington requires each county to develop protocols that direct pre-hospital care by EMTs. Periodically, these protocols need to be updated and revised to reflect current standards of care. The last revision occurred in 1995 and the current revision project is slated to be completed by the BLS Training Section at the end of 2001. The Guide will be available to all King County EMTs both in hard copy and on the BLS Training web site.

**Note: In the Spring of 2001, Patty Ousley, an EMS Training Coordinator for the EMS Division, received the Director's Award from Public Health - Seattle & King County for her development of a curriculum for EMS providers called 'Domestic Violence: The EMS Response'. In addition, research results from the defibrillation program entitled 'ECG Rhythm Recognition and Monitoring by EMTs' was selected for presentation at the 19th Annual EMS Today Conference in Baltimore, MD on March 15, 2001 and won the award for best poster presentation.

Cardiopulmonary Resuscitation (CPR) and Automated External Defibrillators (AEDs)

The goal of the **Student CPR Training Program** is to train secondary school teachers and fire fighters to become CPR instructors so they can provide the training to the students. Nine school and six fire districts currently participate in the program, which follows the American Heart Association approved curriculum. This year 18,500 students grades 6-12 were trained in CPR. The program was selected by the American Heart Association to be a pilot for the new AHA CPR IN THE SCHOOLS curriculum in the fall of 2001. As a result, the King County school CPR instructors will be among the first in the nation to receive the new materials.

The EMS Division sponsors a **CPR training program** for all King County employees. The King County Executive encourages all employees to attend these free classes given during their work day. Approximately 2,000 employees were trained last year and it is projected that at least 3,000 will be training this coming year. Numbers in the year 2001 were lower than anticipated, since many employees chose to wait until new CPR standards were introduced this year.

The EMS Division works with local cardiologists who **recommend CPR training to high risk cardiac patients** and their families. These patients are under a physician's care for a heart related problem. This program allows for instructors to go into the home and teach CPR to the patient, their family, and friends. This year, EMS has gone into 25 homes and trained approximately 150 people. Some of these homes also have Automatic External Defibrillators (AEDs) and AED training is also provided.

The goal of the **Community-Responder CPR/AED Program** is to improve survival from sudden cardiac death in Seattle-King County by having community responders use Automatic External Defibrillators (AEDs) in either public settings or in an individual residence. This is the second year since implementation of this program which started in July 1999. There are now over 300 AEDs in place at this time and the number is steadily increasing. AEDs are the single most important factor affecting sudden cardiac death since CPR. The specific aim is to ensure that people are trained to use the device and that the location of the AED is documented within the EMS system. This allows dispatchers to inform the fire department when they respond to the call.

Emergency Medical Dispatch

The EMS Division provides **Basic and Continuing Education Training** in Emergency Medical Dispatch (EMD) to emergency 911 dispatchers. This training allows the dispatcher to correctly triage callers in order to send the right level of care to the patient. This year 40 dispatchers from King County were given the 32-hour Basic Training class. In addition, 72 dispatchers were provided 8 hours of Continuing Education in EMD related topics.

The **Telephone Referral Project (TRP) (*)** allows emergency dispatchers to transfer non-urgent callers to a consulting nurse line. This project was implemented in 1998 and continues to operate at Eastside Communications Center, serving east and north King County. Approximately 333 callers were transferred to the nurse from Eastside Communications Center during the year 2000, the last full year for which data is available. Approximately 86% of these patients reported their condition was better than when they had called 911 and 95% of the patients were satisfied with the service they received.

This project was expanded to Valley Communications Center on August 1, 2000, and a two month Phase I was completed October 1, 2000. During this phase, calls were transferred to the nurse line but a BLS unit was also sent. Phase II at Valley Communications was conducted from March 15 to July 15, 2001. During Phase II, BLS units were allowed to respond at their discretion. Eighty calls were transferred to the nurse line, a lower than anticipated number, and 95% of the patients satisfied with the medical outcome.

A primary goal of the **ALS Dispatch Triage Guidelines Revisions project (*)** was to increase the efficiency of the EMS system by reducing the rate of growth of ALS calls and decreasing unnecessary ALS responses. Comprehensive revisions to the Criteria Based Dispatch (CBD) Guidelines were completed in August, 2000. Dispatch training for approximately 175 dispatchers in the new CBD Guidelines occurred in September, 2000. Training for fire departments in the CBD Revisions was provided by conducting approximately 85 classes, completed in May, 2001. An EMD Quality Improvement process was implemented in March, 2001, allowing communications center and ALS provider personnel to conduct case review, including the actual dispatch tape recording.

To date, approximately 100-150 cases have been reviewed each month. Phase IV will include an evaluation of the impact of the changes on ALS call volume, BLS requests for ALS from scene

and ALS Code Green rates. A more formal evaluation of the 6-month period from October 1, 2000 to March 31, 2001 will be conducted as soon as data from the MIRF database needed to conduct this review is available. A case review of medical appropriateness of the CBD changes for key areas where significant changes were made will also be conducted.

Injury Prevention and Public Education (*)

The **Fall Factors Program** promotes fall prevention for low-income seniors by reducing environmental risks at home. Ten agencies are currently referring patients to this program and ten fire departments are participating in the home assessments. The program is available county-wide to any resident that is 65 years or older and at high-risk of falling. The program has completed 701 home assessments. The Central Region EMS and Trauma Care Council provides some support for this program.

The **Think Again Program** is an in-class training program targeting high school students addressing the consequences of drinking and driving, seatbelt use and alcohol poisoning. The program is taught by paramedics and firefighters and is supported by the Washington Traffic and Safety Commission and the EMS Division. The program is available to all schools in the Seattle and King County area. This year, over 10,000 students have been through the program.

The **Bicycle Helmet Program** is designed to reduce the number of bicycle injuries by providing low-cost helmets to youth in King County. The program has sold or given away 1,842 helmets through various fire departments and King County Medic One.

The **Child Car Seat Check-up program**, sponsored by local fire departments and King County EMS, provides an opportunity for the public to learn about the proper method of child car seat installation. National Highway Transportation Safety Administration (NHTSA) Certified Technicians are on hand to inspect child car seats. Ninety-three child car seat checks have been conducted through the program.

King County Medic One Program

The EMS Division administers the King County Medic One (KCM1) paramedic program, one of six Advanced Life Support (ALS) programs operating in the county. KCM1 employs over 60 paramedics and support staff in providing emergency medical response to patients in the south county region. This service area covers 500 square miles with a population of over 750,000 people. In the year 2000, KCM1 responded to over 14,000 dispatch-selected paramedic alarms in their area in addition to responding to mutual aid in neighboring jurisdictions.

King County Medic One operates six medic units, 24 hours a day, and one unit, 12 hours a day, 365 days a year. Paramedics work 24-hour shifts and utilize five area hospitals for medical direction. KCM1 has 20 vehicles in their fleet and puts approximately 250,000 fleet miles on the medic units per year. Medic units are housed at eight satellite sites that include local fire department stations, KCM1 facilities, and a central office in the industrial area of Kent. The units are placed strategically throughout the service area to minimize response times and

maximize cost-efficiencies.

All King County Medic One paramedics are trained in the Paramedic Training Program at the University of Washington School of Medicine, based at Harborview Medical Center (HMC). Students develop their skills under the tutelage of experienced physicians, nurses and Seattle Fire Department paramedics during the rigorous ten-month training course. Paramedics obtain monthly continuing education training at HMC and other educational venues. These activities are required for their biennial re-certification.

Two positions are shared and co-funded by the EMS Division and KCM1 and directly support regional EMS training; one is the manager of the EMT Training Division and the other is an Education Coordinator Officer assignment for south King County region. Recent innovations include the institution of a Grand Rounds Training (GRT) program that allows on-duty KCM1 medic units to train during their shifts at a central station. This model utilizes a team from the KCM1 program, under the tutelage of the Medical Director, to teach paramedics new skills as well as provide training on high-risk/low-frequency skills and procedures.

Additional ALS services are provided by staffing medic units for special events (World Trade Organization conference and high-volume public activities) as well as periodic, supplemental coverage to the citizens of Vashon Island. A paramedic “Bike Team” is in development for events where motor vehicle access is limited. KCM1 personnel also participate in regional BLS training, dispatch review and training, equipment purchasing and vehicle replacement initiatives.

King County Medic One remains one of the premier paramedic providers in the nation. Its high cardiac-arrest survival rate and superior customer-service and customer satisfaction levels help maintain its reputation and define its performance standards. The personnel who provide this "core service" are dedicated to public service at the highest level.

**Note: In the Spring of 2001, three King County paramedics (Dave Ackland, Michael Damm and Jeff Merritt) received Director's Awards from Public Health - Seattle & King County for their outstanding leadership during the difficult extrication and medical treatment of a patient perched in a tree approximately fifty feet above the ground. Their teamwork with the Tukwila Fire Department demonstrates the collaborative effort that ensures excellent emergency care in the community. King County Medical Services Officer Tony Scoccolo also received a Director's Award for his dedicated teamwork, solid decision-making, and superior patient management.

Medical Control

The **Medical Program Director (MPD)** is responsible under the Washington Administrative Code (WAC) and Revised Code of Washington (RCW) for medical control and direction of certified EMS personnel in King County. This is accomplished through the delegation of on-line medical control to ALS personnel and through written treatment guidelines for BLS personnel. The Medical Directors’ Committee, comprised of physicians from each ALS provider agency, meet on a quarterly basis to address a variety of medical issues. This year, two items of discussion were prominent. First, a uniform drug list for ALS providers was developed and

approved. Secondly, hospital diversion was the most vexing problem for the Medical Directors. The Puget Sound Hospital Bed status web site now reports hospital and emergency bed availability through out Puget Sound. A protocol for response-to-bed-unavailability is under development.

Paramedics are required to complete 50 hours of **Continuing Medical Education** per year. The Paramedic Training Program at the University of Washington, School of Medicine, and the EMS Division develop and coordinate classes to meet these requirements. In addition, the EMS Division contributes courses in Advanced Cardiac Life Support (ACLS) and Pediatric Education for Pre-hospital Professionals (PEPP). Three other specialized modules have been developed by the EMS Division and presented to students in the Paramedic Training Program. These include Health Risk Management, Back Safety Training, and Providing Culturally Appropriate Care in EMS.

In support of the dedicated men and women who provide direct patient care services, the EMS Division is developing a **Health Risk Management Program**. In February, a pilot project to assess health risk parameters was provided to paramedic volunteers in King County. Following the screening they were given a confidential assessment with recommendations to improve health status. Approximately 50% of this staff took advantage of the program. Their evaluations stated that they liked the process, that they would participate again and that they had made significant lifestyle changes based on the information they received. The aggregate data has been helpful in guiding future educational outreach programs.

As part of a **Musculoskeletal Injury Prevention Program**, two Back Safety Videos for EMS Providers were produced by the EMS Division and are now available nationwide. The videos are being used to train King County Medic One paramedics and UW/HMC paramedic students how to use proper body mechanics and on the importance of healthy lifestyles for the long-term protection of the musculoskeletal system. In addition, comprehensive Musculoskeletal Injury Prevention Policies and Procedures have been put into place to direct training and injury investigation.

**Note: The Back Safety Video Project is being recommended for the Public Health - Seattle & King County, Director's Award and the videos were recently featured in *EMS Best Practices* in September 2001 and will be featured in the *Journal of Emergency Medical Services* in November 2001.

Regional Data Collection Project (*)

The Regional Data Collection (RDC) Project is an ongoing countywide effort to implement a system that allows electronic collection and distribution of EMS data. The goal of the project is to allow EMS providers the ability to complete an electronic version of the Medical Incident Report Form (MIRF) and electronically transfer that report directly to a regional database. The collection and consolidation of data via electronic means will improve the accuracy and completeness of the data, provide access to the aggregate data by individual service providers, allow for more intensive analysis of the data and facilitate the assembly of system reports.

The RDC project is divided into three major phases: Phase I includes the development and implementation of a system prototype with seven pilot EMS agencies. The pilot agencies have worked extensively since August 1998 to build an optimal prototype for testing. Phase II will begin by inviting the remaining EMS agencies to actively participate, once the system design has been tested and proven to be successful. Quarterly meetings are scheduled to apprise all EMS agencies on the status of the project and provide an opportunity to address questions and comments. Phase III will focus on connectivity with hospitals and other health care agencies.

At this time, all six agencies in Phase I are collecting data electronically including Bellevue Fire Department, Federal Way Fire Department, Kent Fire & Life Safety, Redmond Fire Department, Shoreline Fire Department, and Fire District #40. Integral to the process of sending data to the EMS Division is a functional data extract mechanism. The EMS Division is committed to thoroughly testing the electronic data collection and importation design prior to bringing other agencies on board.

Phase I is expected to be complete in December 2001, including testing of data transfer from agencies and thorough analysis of the system design. A Phase I Final Report will be brought to the EMS Advisory Committee for review in December 2001 prior to initiating Phase II in January 2002.

B. Grant Funded Programs and Projects

Center for the Evaluation of EMS (CEEMS)

The Center for the Evaluation of Emergency Medical Services (CEEMS) is a joint program of research endeavors with Public Health - Seattle & King County and the University of Washington in the field of pre-hospital emergency care. The primary objective is to provide innovative and relevant research in the chain of survival that assists the EMS system in maintaining the role as a national and international leader in the field of resuscitation from cardiac arrest.

A current research effort is the **Heart Attack Survival Kit (HASK) Project**. The goal of the HASK project is to increase appropriate action to a heart emergency among persons age 65 years and older. HASK is a collaborative undertaking of Public Health - Seattle & King County, the EMS Division and the University of Washington, Division of Emergency Medicine. The primary objectives of HASK are to increase calls to 911 among persons 65 years and older who experience chest pain, and increase self-administration of aspirin. HASK is funded by a 4-year National Institutes of Health grant.

All fire departments and districts in King County are in the process of delivering approximately 27,000 heart attack survival kits. Data collection for 911 calls and self-administration of aspirin beginning October 2000 and will continue through December 2003. Articles will be written and submitted for publication to answer the question on a national and even international basis

whether or not this type of intervention positively affects the behavior of seniors in responding to the symptoms of a heart attack.

**Note: The following paper was published in Archives of Internal Medicine - Becker L, Eisenberg M, Fahrenbruch C, Cobb L: 'Cardiac arrest in medical and dental practices: implications for automated external defibrillators'. *Arch Intern Med.* 2001;161(12):1509-1512. In addition, a review was published in the New England Journal of Medicine summarizing the last thirty years of research in pre-hospital care - Eisenberg, M.S., Mengert T.J.: 'Primary Care: Cardiac Resuscitation'. *N Engl J Med* 2001; 344: 1304-1313, Apr 26, 2001.

Central Region EMS and Trauma Care Council

Traumatic injury is the leading cause of death for all people under the age of 44 years old and the leading cause of disability for all people under age 65. The Statewide Emergency Medical Services and Trauma Care System Act of 1990 (RCW 70.168) established eight emergency medical services and trauma care planning regions in Washington State. Following guidelines set forth by the Act, the Central Region Emergency Medical Services and Trauma Council, in collaboration with pre-hospital providers, hospitals, rehabilitation facilities, and Public Health – Seattle and King County, has developed a regional trauma care system dedicated to ensuring optimal care for victims of life threatening traumatic injuries.

In 1999, Central Region trauma centers treated 2,996 victims of serious trauma. Serious trauma is defined as cases where patients required a minimum of three days hospitalization (isolated hip fractures were excluded from this data). The current designated trauma centers are Auburn Regional Medical Center, Evergreen Hospital Medical Center, Harborview Medical Center, Highline Community Hospital, Northwest Hospital, Overlake Hospital Medical Center, St. Francis Hospital, and Valley Medical Center.

Trauma centers are designated by the State Department of Health every three years and must meet stringent criteria in order to be designated. Fiscal year 2001 marked the beginning of a new designation period. The first step in the designation process is to make recommendations to the State Department of Health regarding the number and level of trauma centers. The Central Region's Quality Assurance and Hospital Committees reviewed several reports provided by the Central Region Trauma Registry, including the 'Central Region Trauma System 1998-1999 Summary Report'. Data analyzed in the report included pre-hospital response, scene, and transport times; patient distribution among the eight trauma centers; count and rate of serious trauma over time; and expected mortality rates vs. observed mortality rates.

Upon reviewing the findings, the Trauma Care Council recommended to the State Department of Health that the current configuration of trauma centers remain in effect. The second and third steps in the designation process involved application for designation and on-site inspections. The State Department of Health is expected to conclude the designation of Central Region trauma centers by the end of 2001.

C. Other EMS Division Programs and Activities

Administrative Functions

The Administration section is responsible for the coordination of services with other divisions of Public Health - Seattle & King County and other county agencies, councils, and offices, such as the Prosecuting Attorney, King County Executive, Risk Management, and the King County Council. Responsibilities also include the coordination and delivery of strategic planning, union negotiations, personnel and payroll issues, diversity management, legal compliance liability issues, contract administration, and the issuance and compliance of policies and procedures.

The Administration section maintains contracts for five paramedic provider groups of Advanced Life Support Services (ALS) and for thirty-three Basic Life Support Provider (BLS) agencies located in King County and maintains fiscal responsibilities for the EMS Division, including budget preparation and monitoring, projection of long term financial planning, and management of levy funds.

Critical Incident Stress Management (CISM)

The Critical Incident Stress Management program within the EMS Division provides critical incident debriefing and defusing services to emergency services personnel including police officers, firefighters, EMTs, paramedics, dispatchers and corrections officers. A critical incident is any situation in which emergency services personnel experience an unusual or extreme emotional reaction which interferes with their ability to function normally at a scene or with 24-48 hours later.

The EMS Division coordinated 27 debriefings and 13 defusings (a less intense intervention of shorter duration) from October 1, 2000 to September 30, 2001. This year, the EMS Division also co-sponsored an annual CISM Conference for the Puget Sound region along with the International Critical Incident Stress Foundation. Staff also prepared a Peer Support Program Implementation and Training guide for emergency service agencies, to be implemented in September, 2001.

Data Analysis and Reporting

The EMS Division operates under the guidelines presented in the various Master Plans, Master Plan Updates, and Strategic Plans, and approved by the King County Council. The process for updating these directives and implementing the specific programs identified in the plans requires significant data analysis and program coordination. An integral component of this analysis is the data modeling used to identify optimal placement of paramedic units. A few of the major activities this year included the provision of ongoing data analysis to those responsible for updating the EMS 1998-2003 Strategic Plan and development, implementation and ongoing management of current strategic initiatives, including the Regional Purchasing Program, and the Regional Data Collection Project.

The EMS Division is also responsible for management of the Medical Incident Report form data gathered in the field in compliance with Washington Administrative Code (WAC) 246-976-420. Duties related to the oversight of this dataset include management of the cardiac database and the entire data warehouse system, collection and processing of approximately 115,000 Medical Incident Report forms per year, and regular review of the EMS data set and data system. The EMS Division provides rapid response to all data requests from external agencies, King County EMS agencies, and the EMS Division, provides data analysis and reports for pilot projects, EMS programs and research projects, and provides network connectivity and management for the EMS Division.

Emergency Preparedness

The EMS Division led the effort to respond to requests by Public Health - Seattle & King County for staff training in emergency preparedness. The Emergency Preparedness coordinator designed a new series of workshops to train small groups (40 or more trainees) at individual site locations, and large groups (100 or more trainees) in biannual workshops. Approximately 200 employees will receive the training this year. Support was provided by the Federal Emergency Management Agency (FEMA) in training the Emergency Preparedness coordinator in needs assessment, instructional design, and course development techniques. FEMA has made a commitment to further support EMS by providing advanced training in instructional delivery as well as in alternative methods enabling the EMS Division to provide training in Emergency Preparedness on the Public Health website.

The EMS Division led the effort to respond to requests by Public Health - Seattle & King County for supplemental emergency communication for its staff by coordinating a group of amateur radio employees and instituting a set of goals, procedures, etc. for the group, Public Health Amateur Radio (PHAR). EMS provided time, purchased radios and offered administrative advice and back-up for the project. The EMS Division continues to provide updates and expansion of the manual of the Public Health Emergency /Disaster Operations and the key staff wallet card, an emergency phone number list produced quarterly. EMS played a key role in the response to the Nisqually Earthquake on February 28, 2001 by providing several Emergency Operations Center representatives to the Seattle, King County and Public Health Emergency Operations Centers, and preparing follow-up after-action reports.

EMS Advisory Committee (*)

The EMS Advisory Committee was formed in December 1997 and meets on a quarterly basis to discuss the progress of the strategic plan and review the development and implementation of the strategic initiatives. A copy of the current membership on the committee and their respective representation is located in Appendix F (page 49). The committee played an integral role in supporting the efforts of the EMS 2002 Task Force, reviewing the Telephone Referral and ADAPT Projects, and monitoring the restructure of the Evergreen Medic One program.

Quality Improvement Program (*)

Enhancement of the EMS quality improvement program was identified as one of the 1998-2003 strategic initiatives. In response to this directive, a document was created identifying the major quality improvement activities and processes currently in place in the EMS Division. This effort will assist in identifying where there are areas for improvement within the EMS Division and is expected to be updated on an annual basis. In addition, the EMS Division developed a Quality Improvement Training for EMS agencies and worked with the BLS Advisory Committee to train participants in how to implement Quality Improvement processes in their own departments. The committee expects to continue as a forum to address regional BLS issues.

Regional Purchasing Program (*)

The EMS Regional Purchasing Program is a voluntary countywide program designed to reduce equipment and supply expenses by increasing the purchasing power of EMS providers. The King County contract with Life-Assist, Inc. was renewed on April 1, 2001 for a final year of the three-year contract. In March 2001, a survey was distributed to all King County EMS agencies to estimate participation and satisfaction with the Regional Purchasing Program. The results were very encouraging showing that 95% of the agencies that responded were participating in the program, of which 76% considered themselves "very active" in the program. Results also showed that 100% were satisfied with the program, 95% felt the program was easy and efficient to use, and 95% of the responding agencies had realized a cost savings.

In addition, a cost-savings estimate was derived by comparing agency expenditures to catalogue purchase prices. The estimate indicated that agencies saved a total of $153,420 in the last contract period (4/1/00 - 3/31/01), an increase of $20,682 in savings from the previous contract period (4/1/99 - 3/31/00). The Regional Purchasing Committee is beginning preparations for going out to bid in early 2002. The Regional Purchasing Committee is currently looking into ways of expanding the program to include other EMS equipment and services. Possible items for future contract agreements include medical oxygen, ALS medications, and uniforms.

EMS 1998-2003 Strategic Plan
Strategic Initiative Status Summary Table

Strategic Initiative:	Development Stage	Pilot Project Stage	Implementation Stage
EMS Advisory Committee		**N/A**	**Initiated: 12/ 97**
Regional Purchasing Program	**Developed pilot project**	**Completed pilot: 3/ 99**	**Initiated program: 4/ 99**
New Vehicle Replacement Program	**Reviewed project options 2/99**	**N/A**	**Completed: 3/01**
ALS, BLS, regional services, and financial monitoring systems	**Developed pilot project 8/98**	**Anticipate completion of Phase I: 12/01**	**Anticipate initiation of Phase II: 1/02**
ALS Response and Dispatch Triage Criteria	**Developed work plan**	**Initiated Phase IV: 9/ 00**	**Anticipate completing Phase IV: 12/01**
Transport destination policies	**Developed pilot project**	**Completed pilot: 7/ 99 Expanded: 1/00**	**Initiated program: 9/ 00**
Injury Prevention and Public Education	**Developed review project**	**Completed initial review: 6/99**	**Initiated targeted projects: 03/01**
Dispatch referral network for appropriate calls	**Developed pilot project**	**Completed Eastside pilot: 6/ 99 Expanded to Valley: 8/00**	**Anticipate completing evaluation: 12/01**
BLS run review program and performance measurements	**Developed pilot project**	**Completed pilot 6/ 99**	**Incorporated into Quality Management Program**
Quality Management Program	**Ongoing**	**Ongoing**	**Developed QI Documentation: 12/00**
Strategic Planning for next EMS financial period	**Developed plan**	**N/A**	**Completed: 3/01**

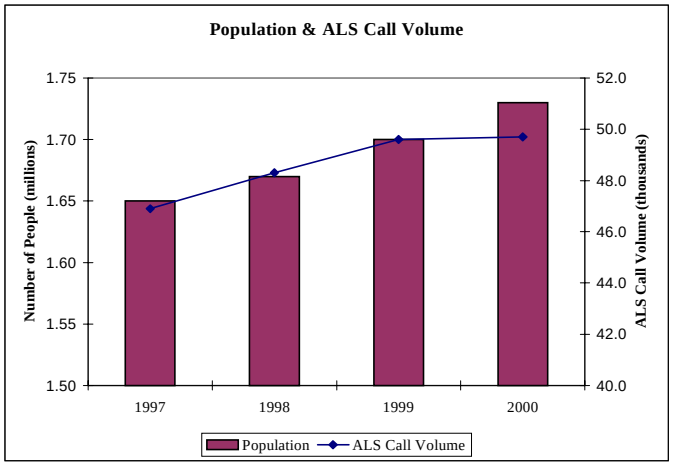
2000 EMS Statistics Summary
Seattle and King County*

The following statistics are derived from the data collected on the Medical Incident Report Forms (MIRFs) and submitted by EMS agencies to the EMS Division for the year 2000.

General Statistics:

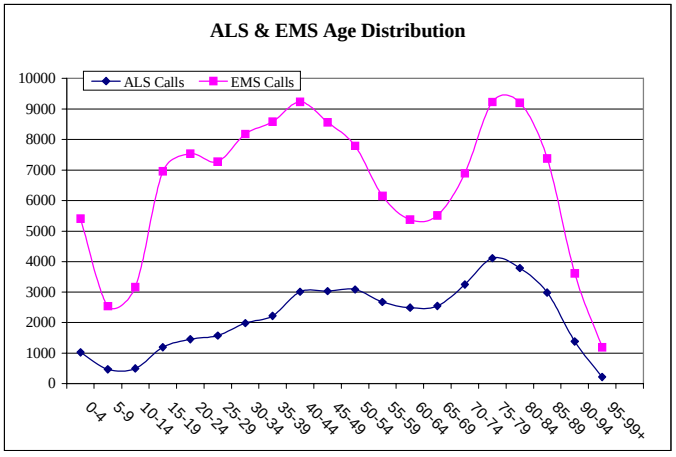
Service Area 2,134 sq. miles

Population	Seattle-King County	% Growth
1980	1,269,898	
1990	1,507,305	18.7%
2000	1,730,504	14.8%



Responses by Age Group:

	ALS	EMS
0-17 yrs	2,622 (6.1%)	14,784 (11.4%)
18-24 yrs	2,029 (4.7%)	10,816 (8.3%)
25-44 yrs	8,798 (20.3%)	33,269 (25.5%)
45-64 yrs	11,284 (26.1%)	27,893 (21.4%)
65+ yrs	18,504 (42.8%)	43,484 (33.4%)
Total	**43,237**	**130,246**

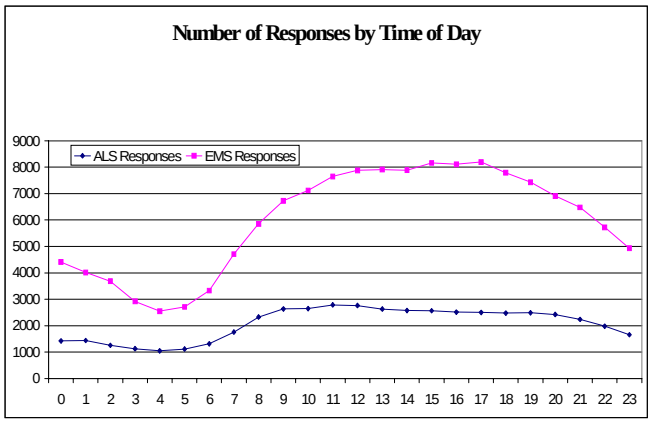


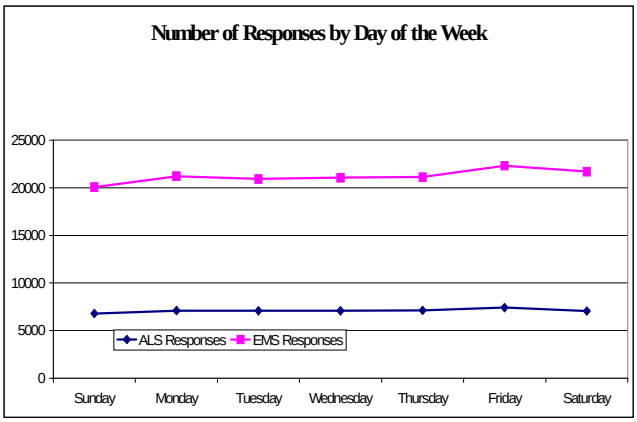
Operations:	ALS	EMS (all calls)
Number of Responses	49,662	148,474
	ALS	**BLS**
Average Response Time (**)	6.0 minutes / 9.4 minutes	4.9 minutes / 6.3 minutes
6 Minutes or less		83.0% / 64.0%
8 Minutes or less	79.9% / 51.0%	
10 Minutes or less	89.0% / 70.4%	
12 Minutes or less	94.0% / 82.7%	
14 Minutes or less	96.4% / 89.1%	
Suspended Alarms	8.0%	1.4%

* In some instances, totals differ due to missing values or absence of the event.

** Response times are defined as follows: the time of unit dispatch to time of arrival at the scene (all of King County) / the time of call arrival at dispatch to the time of arrival at the scene (excluding Seattle). ALS = Advanced Life Support and BLS = Basic Life Support.

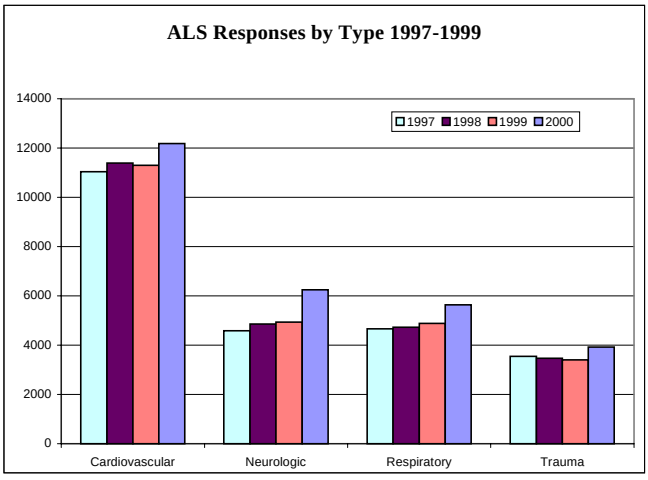
Characteristics of Responses:

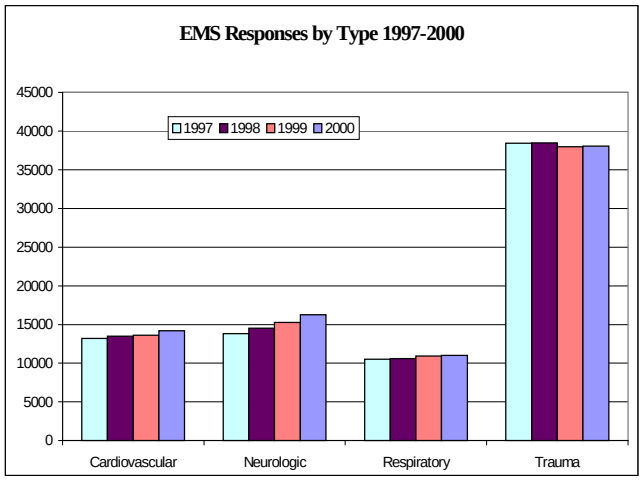




Incident Locations:	**ALS**	**EMS**
Home/Residence	25,109 (60.6%)	69,362 (54.2%)
Nursing Home	2,004 (4.8%)	3,382 (2.6%)
Clinic / MD Office	1,616 (3.9%)	1,919 (1.5%)
Street/Highway	2,127 (5.1%)	13,206 (10.3%)
Other/Unknown Location	10,547 (25.5%)	40,049 (31.3%)
Total	**41,403**	**127,918**

Responses by Type:	**ALS**	**EMS**
Cardiac	12,176 (29.5%)	14,202 (11.7%)
Neurologic	6,242 (15.1%)	16,276 (13.5%)
Respiratory	5,633 (13.6%)	11,014 (9.1%)
Trauma	3,914 (9.5%)	38,068 (31.5%)
Abdominal/GU	2,404 (5.8%)	8,370 (6.9%)
Metabolic / Endocrine	2,245 (5.4%)	3,433 (2.8%)
Other Illness	8,688 (21.0%)	29,589 (24.5%)
Total	**41,302**	**120,952**



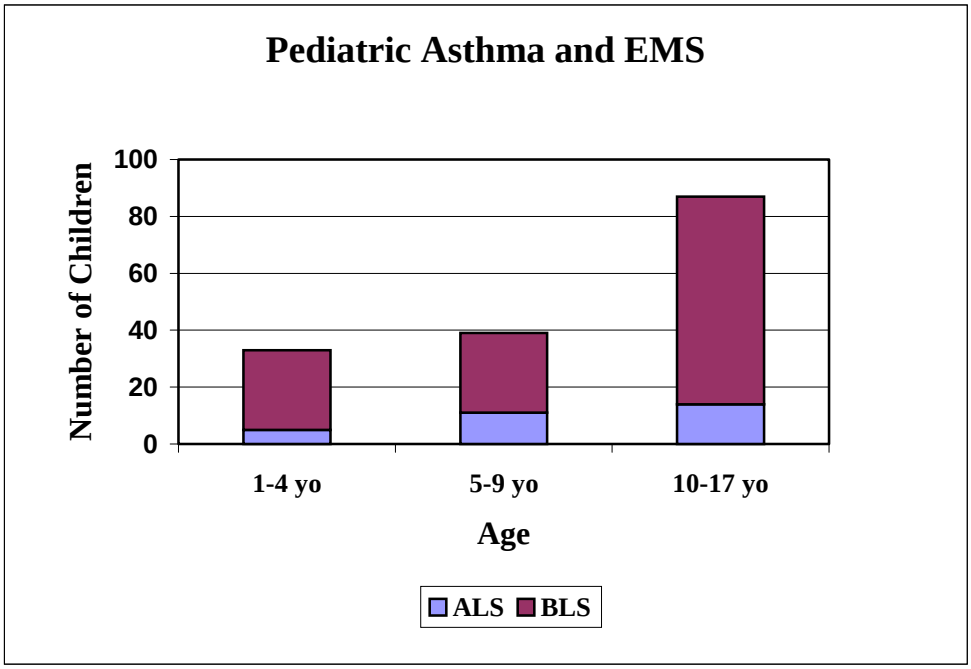


Highlight: Pediatric Asthma

In October 2000, Public Health - Seattle & King County released a report entitled 'Childhood Asthma Hospitalizations - King County, Washington, 1987-1998' indicating that the number of hospital admissions for childhood asthma in King County had increased by 53% between 1987 and 1998. The largest increases had occurred during the early- to mid-1990's. In recent years, this rate has leveled off, but remains high. About 6% of King County children (one in 15) have asthma. Hospitalization rates were highest in children 1-4 years old and in children living in urban areas of King County.

During the year 2000, EMS agencies (with the exception of Seattle) were able to collect asthma information for the first time when the data collection form was revised to allow EMS personnel to identify patients specifically with asthma. An analysis of the data reviewed all cases of children aged 1-17 years old requiring an EMS response due to their asthma. The results revealed a total of 129 children received a BLS response, and of those, 30 children also required a paramedic evaluation. Seventy-four percent of the children were transported to a hospital for further care.

With only one year's worth of EMS data available for analysis, no detailed comparisons between the Public Health report and the impact on the EMS system can be made. However, since pediatric asthma rates remain high in the region, monitoring the status of EMS responses should remain a priority.



Highlight: Citizen CPR and Cardiac Arrest Survival

Seattle and King County enjoy one of the highest cardiac arrest survival rates in the world, in large part due to the excellent pre-hospital response of citizens and emergency medical service (EMS) professionals. This response includes immediate activation of 911, early initiation of CPR, and expert care by EMS personnel.

An important part of this successful response is the high rate of bystander CPR in the county. Citizens began receiving free training from the Medic II program in 1971. CPR training is also taught locally by the American Heart Association and the American Red Cross and is part of the public school curriculum.

Enhancing the increase in bystander CPR even further was the implementation of dispatcher-assisted bystander CPR in the early 1980's. Dispatchers offer CPR instructions over the telephone and assistance is frequently accepted by callers. In addition to CPR, other factors that greatly increases chances for surviving a cardiac arrest is early defibrillation by EMTs and the rapid arrival and delivery of advanced cardiac life support by paramedic personnel.

CPR Initiated by (for all calls):

CPR Initiated by Bystander	627/1339 (47%)

Cardiac Survival Rate: *

Year	Rate
2000	96/316 (30%)
1996-2000	522/1939 (27%)

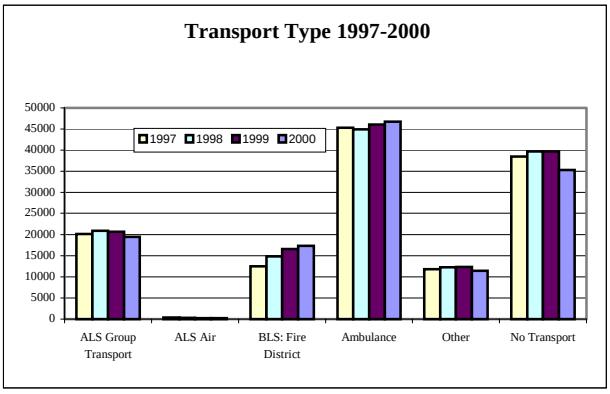
* Definition: discharged from hospital alive / treated patients in cardiac arrest on arrival of EMS, with a rhythm of ventricular fibrillation.

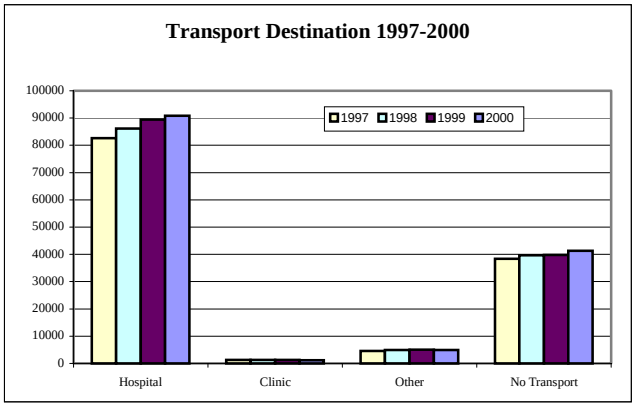
Transport Type:

ALS Transport	19,446	(14.9%)
ALS Air	260	(0.2%)
BLS - Fire District	17,359	(13.3%)
BLS - Ambulance	46,741	(35.8%)
Other	11,443	(8.8%)
No Transport	35,349	(27.1%)
Total	**130,598**	

Transport Destination:

Hospital	90,844	(65.7%)
Clinic	1,164	(0.8%)
Other	4,988	(3.6%)
No Transport	41,273	(29.8%)
Total	**138,269**	

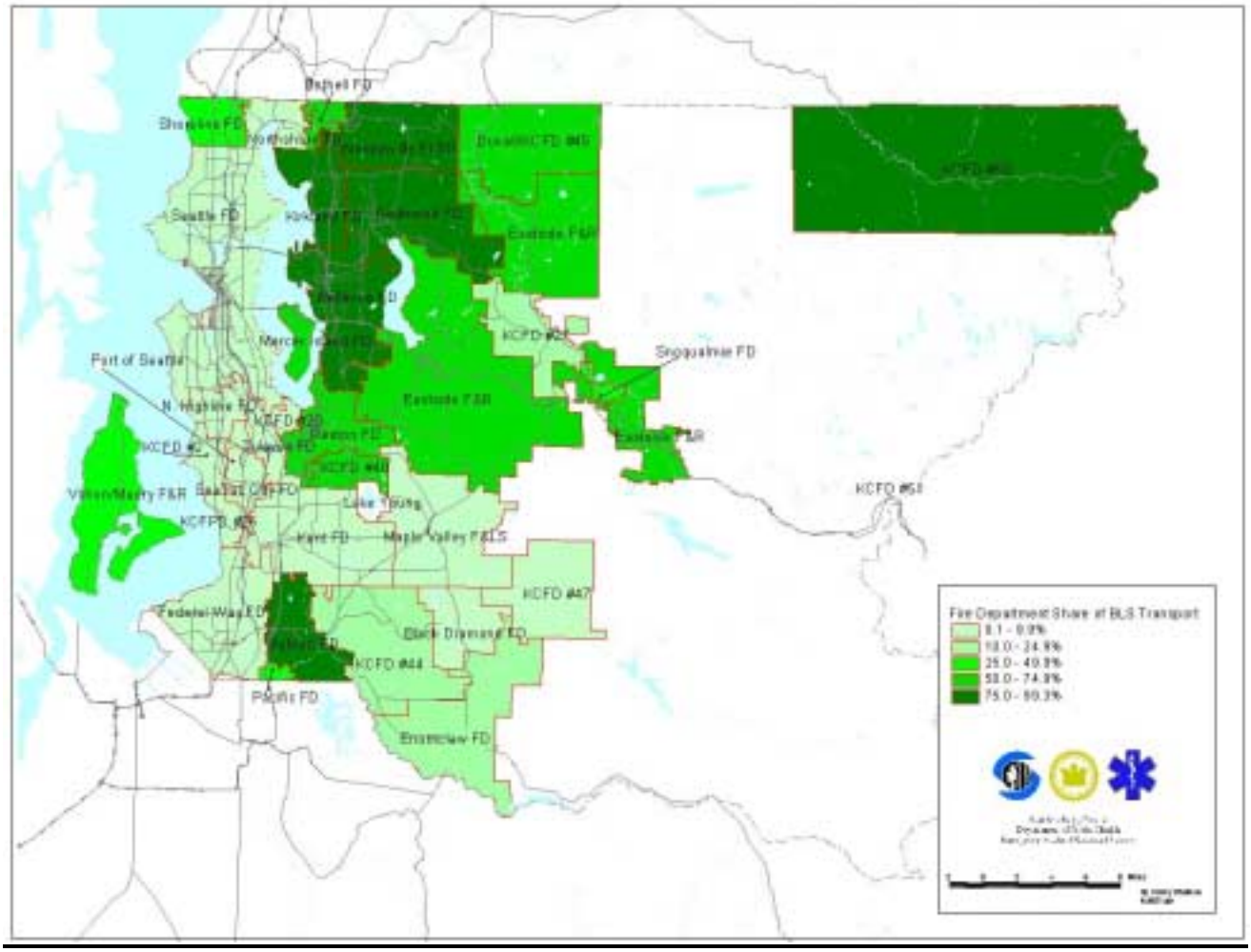


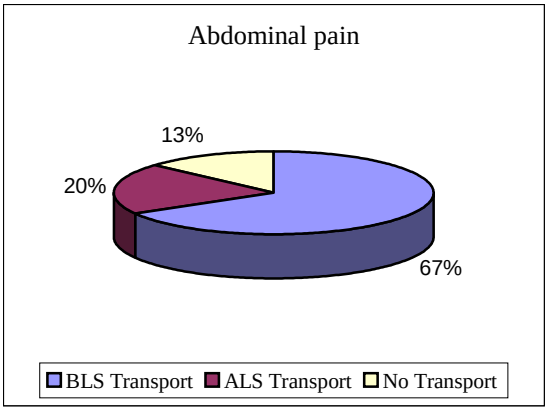


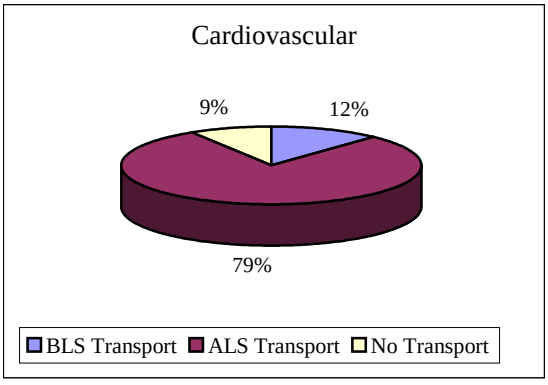
Highlight: Types of Transport Variation in Basic Life Support (BLS)

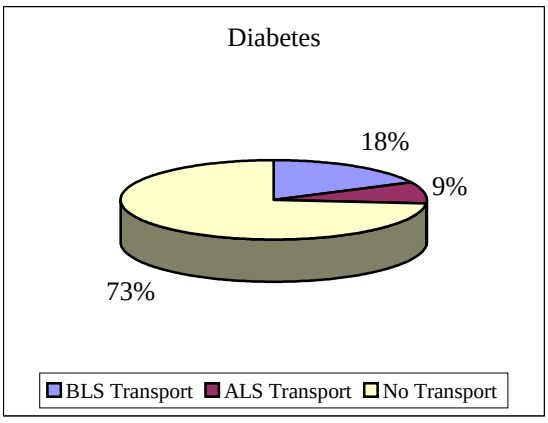
The topic of patient transport for those who access Emergency Medical Services (EMS) is of great interest not only to the general public, but to EMS agencies providing patient care. The question of where patients are transported after they are assessed 'in the field' and how they get there is one of the most requested and evaluated pieces of information collected by the EMS Division.

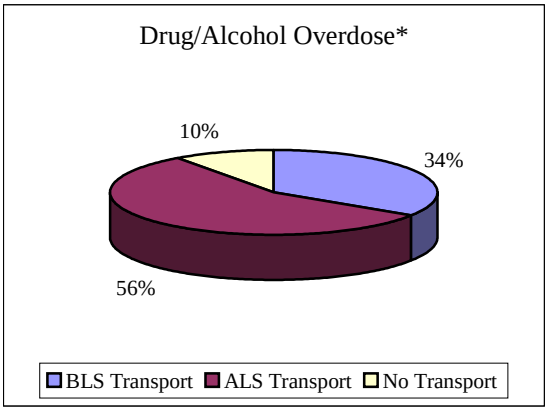
EMS agencies have a number of options for where to transport patients who require additional medical assistance depending on the patient's needs and preferences. These include designated trauma hospitals, local area hospitals, and medical clinics. Agencies also have a variety of options for how to get patients to where they need to go. These include helicopters, used only in the most extreme cases; medic units, used in life-threatening cases; agency units and private ambulances, used in less threatening cases; and private autos, used only in non-urgent, safe cases. The diagram below depicts the variation between BLS agency and private ambulance transports across the county (other transport options are not included in the calculations).











* Predominantly drug overdoses.

Highlight: Types of Transport Variation in Advanced Life Support (ALS)

The dispatch of Advanced Life Support (ALS) to people calling 911 for medical emergencies uses a set of specific criteria reflecting a patient's potential need for the advanced skills and clinical judgment of paramedic personnel. These criteria delicately balance the patient's specific medical and safety needs with the relatively scarce resource of ALS services, and are thus rigorously reviewed to ensure that patients receive the most appropriate medical care possible.

One measure that helps is evaluating whether a patient required transport to a hospital for further medical care. Paramedics have three basic options concerning the transport of patients: 1) transport by medic unit for life-threatening cases, 2) transport by fire department units or private ambulances in less severe situations, or 3) referral to a private physician and/or leaving the patient at the scene when the patient is stable. The decision how to transport a patient is complex and must consider patient circumstance and other logistical factors.

The adjacent graphic depicts the transport patterns found in four common conditions prompting an ALS dispatch. As the graphic highlights, there is considerable variation in the frequency of ALS transport, ranging from 9% for diabetic reactions to 79% for cardiovascular concerns. However, this variation is not surprising when considering the medical circumstances. For example, patients with diabetes require immediate evaluation, but can often be stabilized and left at the scene. On the other hand, patients with complaints of chest pain also need an immediate evaluation, but very often require transport to a hospital for more advanced medical evaluation and treatment.

Part III: EMS Funding and the 2000-2001 Financial Plan

A. Introduction

This section of the EMS 2001 Annual Report will examine the current EMS funding mechanism and the projected status of the EMS Financial Plan through the current levy period. The report will focus on EMS levy funds and other regional tax and county current expense (CX) allocations and discuss the use of those funds in relationship to the funding plan developed by the county, cities, and fire districts in response to the November 1997 EMS levy failure. Components include the following categories:

- EMS Revenues
- EMS Expenditures
- The 2001 Financial Plan
- Recommendations for the remaining Fund Balance

**Note: Under terms of an inter-local agreement between King County and the City of Seattle, EMS levy funds collected within Seattle go directly to the City. The following discussion of EMS revenues and expenditures is limited to King County, excluding the City of Seattle.

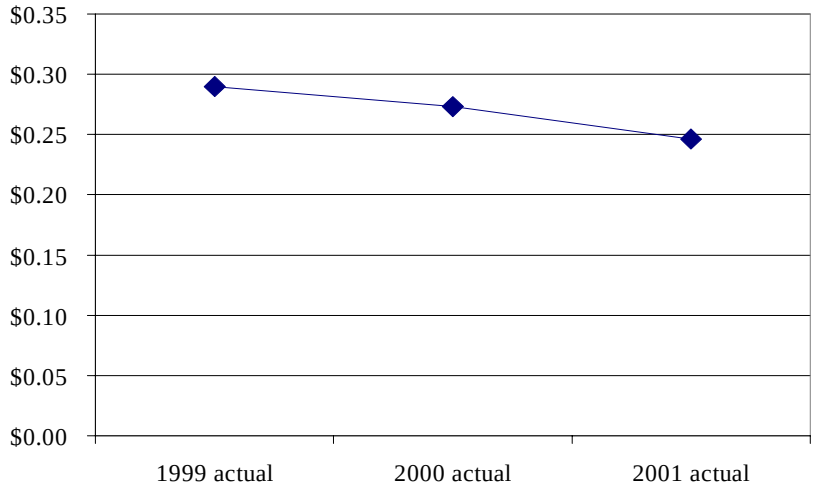
B. EMS Revenues

The regional EMS system is supported by a complex combination of regional EMS dedicated property tax levy funds, local city and county current expense allocations, and fire district funds. However, the failure of the EMS levy in November 1997 resulted in no levy assessment in 1998. The King County Council authorized a framework for short-term borrowing using general obligation tax anticipation notes to fund the 1998 shortfall for the period 1998-2001.

For the period 1999 to 2001, the majority of regional EMS revenues are derived from the EMS levy authorized by King County voters in February 1998. The EMS levy is a regular property tax levy and is therefore subject to the limitations contained in Chapter 84.55.010 RCW, as amended by Referendum 47. Under Referendum 47, property tax growth is limited by the Implicit Price Deflator (IPD), a national inflation economic indicator, or an amount up to 6% by a finding of "substantial need" by a supermajority vote of the County Council. EMS levy funds are restricted by RCW, and can only be spent for EMS-related activities.

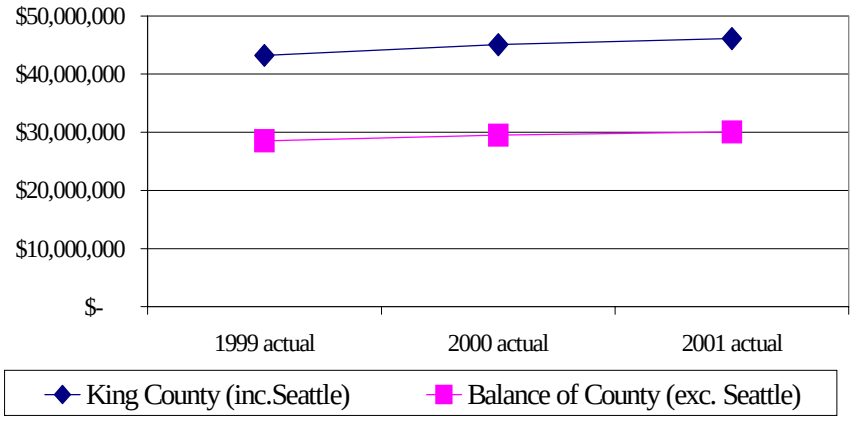
The EMS Levy rate for 1999 was 29 cents per $1,000 of assessed property value. The EMS 2001 Financial Plan assumes modest growth in property values, continued low inflation, and stable expenditure growth. The effect of modest increases in property valuations will continue to reduce the effective levy rate. The levy rate has reduced from 29 cents per $1,000 of assessed property value in 1999, to 27 cents per $1,000 assessed property value in 2000, to 24.64 cents per $1,000 of assessed property value in 2001.

EFFECTIVE LEVY RATE FOR CURRENT LEVY PERIOD
ACTUAL 1999, 2000 and 2001



While the effect of the current economy will be to lower the effective tax rate, actual revenues will increase sufficiently to maintain current levels of expenditure forecasted growth.

LEVY ASSESSED FOR CURRENT LEVY
ACTUAL 1999, 2000 and 2001



In addition to real and personal property taxes, other revenues received in lieu of the property tax include timber harvest taxes, interest earnings, and other miscellaneous taxes. King County contributes annually $375,000 in Current Expense Fund monies toward the support of regional EMS activities. In 2001, the regional levy generated 97% of the total revenues, with current expense and other income combined to generate the remaining 3%.

C. EMS Expenditures

EMS revenues support three major EMS activities related to direct service delivery or support programs.

- Advanced Life Support (ALS) Paramedic Service
- Basic Life Support (BLS) First Responder Service
- Regional Support Programs

Advanced Life Support (ALS) Services:

Since the first EMS levy in 1979, regional paramedic services have been largely supported by the EMS levy. There are five paramedic provider agencies in King County, Shoreline Fire Department (Shoreline Medic One), Public Hospital District #2 (Evergreen Medic One), Bellevue Fire Department (Bellevue Medic One), Public Health – Seattle & King County (King County Medic One), and Vashon/Maury Fire and Rescue. It is estimated that approximately 87% of the funding for regional paramedic services is derived from the EMS levy. The remaining approximately 13% of paramedic service costs are supported by individual paramedic provider agencies.

Levy funds for ALS services are allocated using a standard unit cost methodology which is based on the full costs of operating a paramedic unit 24 hours a day, for 365 days a year, staffed with two Harborview-trained paramedics. In 2001, the standard unit cost allocation was $1,020,257 per paramedic unit. These costs included personnel, medical equipment and supplies, support costs for dispatch, supervision, medical direction, continuing medical education, and other EMS related expenses.

Two types of paramedic units qualify for half of the standard unit cost funding. Emergency medical technician/paramedic (EMT/P) units are staffed 24 hours per day with one EMT trained in defibrillation and one paramedic. Part-time (or 12-hour) paramedic units are staffed with two paramedics for twelve hours during a peak workload period. Each EMT/P or 12-hour unit received $510,128 per unit in 2001. Vashon/Maury Island Fire and Rescue employs two paramedics and was funded $119,900 in 2001.

Paramedic vehicle replacement is funded separately from the standard unit cost allocation and follows a paramedic vehicle replacement plan. First-line paramedic vehicles are currently replaced every three years, and then placed in a backup vehicle status for three additional years. The allocation for vehicle replacement costs in 2001 was $114,188 per vehicle. Strategies for extending the vehicle replacement period are currently being discussed as one of the EMS strategic initiatives.

The annual EMS levy allocation for each paramedic provider is determined by the number of units staffed with two paramedics, the number of Emergency Medical Technician/Paramedic (EMT/P) units, the number of 12-hour 2-paramedic units, and the number of vehicles due for replacement that year. Start-up costs for any new paramedic units (including personnel, medical

equipment and supplies, vehicles, radios, and other items) are added separately. No new paramedic services have been or are anticipated to be added during the current levy period expiring in 2001. The EMS 1998-2003 Strategic Plan calls for paramedic standard unit cost allocations for this levy period to increase annually by the Consumer Price Index (CPI). The 2001 EMS levy funding patterns for paramedic providers are summarized below:

	Full Units (2 paramedic / 24 hour)[1]	Half Units (EMT-P or 12 hour)[2]	Total Funding Units	Standard Funding Amount	Vehicle Replacement Allocation	Total 2001 Budget
Evergreen	2.0	2.0	3.0	$3,060,771	0	$3,060,771
King Co.	6.0	1.0	6.5	$6,631,671	$228,376	$6,860,047
Bellevue	2.0	2.0	3.0	$3,060,771	$228,376	$3,289,147
Shoreline	1.0	0.0	1.0	$1,020,257	0	$1,020,257
Vashon[3]						$119,900
					Total 2001 ALS Budget[4]	$14,350,122

[1] Full Units are funded at 100% of the Standard Unit Cost of $1,020,357.

[2] Half Units are funded at 50% of the Standard Unit Cost of $510,178.

[3] Vashon employs 2 paramedics and is funded at a fixed amount.

[4] The Total ALS Budget for 2001 does not balance to the noted 2001 Estimated Budget on the Financial Plan located in Appendix G (page 51) due to prior year new and expansion costs for new units slated for operation in 2002 under the terms of the 2002-2007 EMS Strategic Plan Update (see footnote 5), and the portion of the County Current Expense revenue allocated to King County Medic One. It is estimated that approximately 87% of the funding for regional paramedic services is derived from the EMS levy. The remaining approximately 13% of paramedic service costs are provided by the paramedic provider agency. In the case of King County Medic One, the paramedic provider agency funding is from a portion of the King County Current Expense allocation.

[5] The underlying policy document for the next levy period of 2002-2007 is the 2002 EMS Strategic Plan Update of the 1998-2003 Emergency Medical Services Plan. The updates recommends increasing medic units by 2.8 units in King County (excluding the City of Seattle) over the 6 year period to maintain current levels of service in response to growing call volumes.

Basic Life Support (BLS) Services:

In accordance with RCW restrictions, levy funds are expended to support the Basic Life Support (BLS) services. The levy provides partial funding to BLS providers to help assure uniform and standardized BLS care, and enhance BLS services to reduce the impact on ALS resources. Basic Life Support services are provided by thirty-three local fire departments and fire districts. In agreement with the county, fire departments, and fire districts, levy funding for BLS services was frozen at 1997 levels for the period of the current 1999-2001 levy. The annual BLS dollar amount for 1999, 2000, and 2001 is approximately $8.2 million. Beginning in 2002, BLS funding will increase at the local area CPI as noted in the 2002 EMS Strategic Plan Update of the EMS 1998-2003 Strategic Plan.

Regional Services and Strategic Initiatives:

The primary purpose of regional EMS programs and services is to support core programs essential to providing the highest quality out-of-hospital emergency care available. Programs are provided by the EMS Division and are funded by a combination of EMS levy funds and King County Current Expense (CX) funds. For purposes of this discussion, state and federal grants are not presented here. The 2001 budget expenditures for the EMS Division program sections are summarized below:

Program or Service Area	2001 Budget (with Strategic Initiatives)[a]
EMT Training and Continuing Education	$710,760
Communications	$11,803
Data Collection/ Reporting	$760,710
Community Programs/Education[b]	$795,690
Medical Control and Quality Improvement	$262,146
Administration	$834,191
Overhead costs[c]	$1,112,323
Contingency	$(251,442)
TOTAL	**$4,236,181**

[a] Total Strategic Initiative Budget in 2001 is $466,000.

[b] Includes dispatch training, school CPR training, Critical Incident Stress Management, emergency preparedness, and injury prevention/public education.

[c] Represents general government overhead charged by King County central offices and Public Health - Seattle & King County, including, but not limited to, King County Financial Management Services (e.g. budget office, strategic forecasting), Central Services (e.g. Printing, Graphic Arts), Prosecuting Attorney Services, Information Services Infrastructure, and Public Health Support Services (e.g. payroll, Office of the Director, Accounts Payable, Fiscal Management Reporting).

Tax Anticipation Notes (TANs):

When the November 1997 levy failed, a funding package consisting of a revised levy, county current expense funds, provider contributions, and a short term borrowing package was developed. The first six months of 1998 was funded through county current expenses of $8,000,000 and provider contributions. The February 1998 revised levy passed to fund the latter half of 1998 and 1999-2001. A short-term borrowing method was required since, by state law, levy revenues could not be collected until 1999. The King County Executive proposed the use of Tax Anticipation Notes (TANs) as the preferred option for short-term borrowing in order to maintain uninterrupted funding for the emergency medical services system. The Executive proposed to the King County Council that TANs be used to fund EMS for the latter half of 1998

and address future monthly cash flow issues created by the timing of the collection of levy revenue receipts in April and October of each year.

In August 1998, the King County Council authorized up to four issuances of tax anticipation notes (Ordinance #13253), and established the terms and conditions of their sale. The proposed borrowing schedule is summarized below.

Proposed TAN Borrowing Schedule:

	Issue Date	**Maturity Date**
#1 EMS TAN - $15.4 million	September 1998	June 1999
#2 EMS TAN - $9 million	April 1999	June 2000
#3 EMS TAN - $6 million	April 2000	June 2001

Due to higher than anticipated tax collections and a refinement in the monthly distribution of program expenses, there were TAN issues in 1998 and 1999 only.

Actual TAN Borrowing Schedule:

	Issue Date	**Maturity Date**
#1 EMS TAN - $15 million	September 1998	June 1999
#2 EMS TAN - $9 million	April 1999	June 2000
#3 EMS TAN - $0 million	NA	NA

D. Expenditure Trends

A review of trends for all EMS expenditures for 1995-2000 reveals how the rate of increase of EMS has changed since the implementation of the EMS 1998-2003 Strategic Plan. Before the failure of the EMS levy in November 1997, the rate of growth from 1995-1996 was 9.5%, and 12.7% from 1996-1997. From 1997 to 2000, total actual growth in core expenditures was 3.5% in total or on average 1.16% annually.

The 1995-1997 expenditure increases were due primarily to paramedic service expansion during that period. In addition, support for Basic Life Support services increased annually at the rate of levy growth, as it had since 1979. Regional Programs and Services also continued to increase at a rate higher than inflation due to increases in program costs.

With the failure of the 1997 levy, several cost containment measures were implemented. In 1998, Basic Life Support was funded at 50% of the 1997 level and 1999 through 2001 funding levels were frozen at 100% of the 1997 level. The Advanced Life Support standard unit cost was inflated by CPI and the Strategic Initiative funding was revised. The increase in budget for 2001 is primarily due to fluctuations in Strategic Initiative funding and paramedic vehicle replacement.

E. 1998-2001 EMS Financial Plan

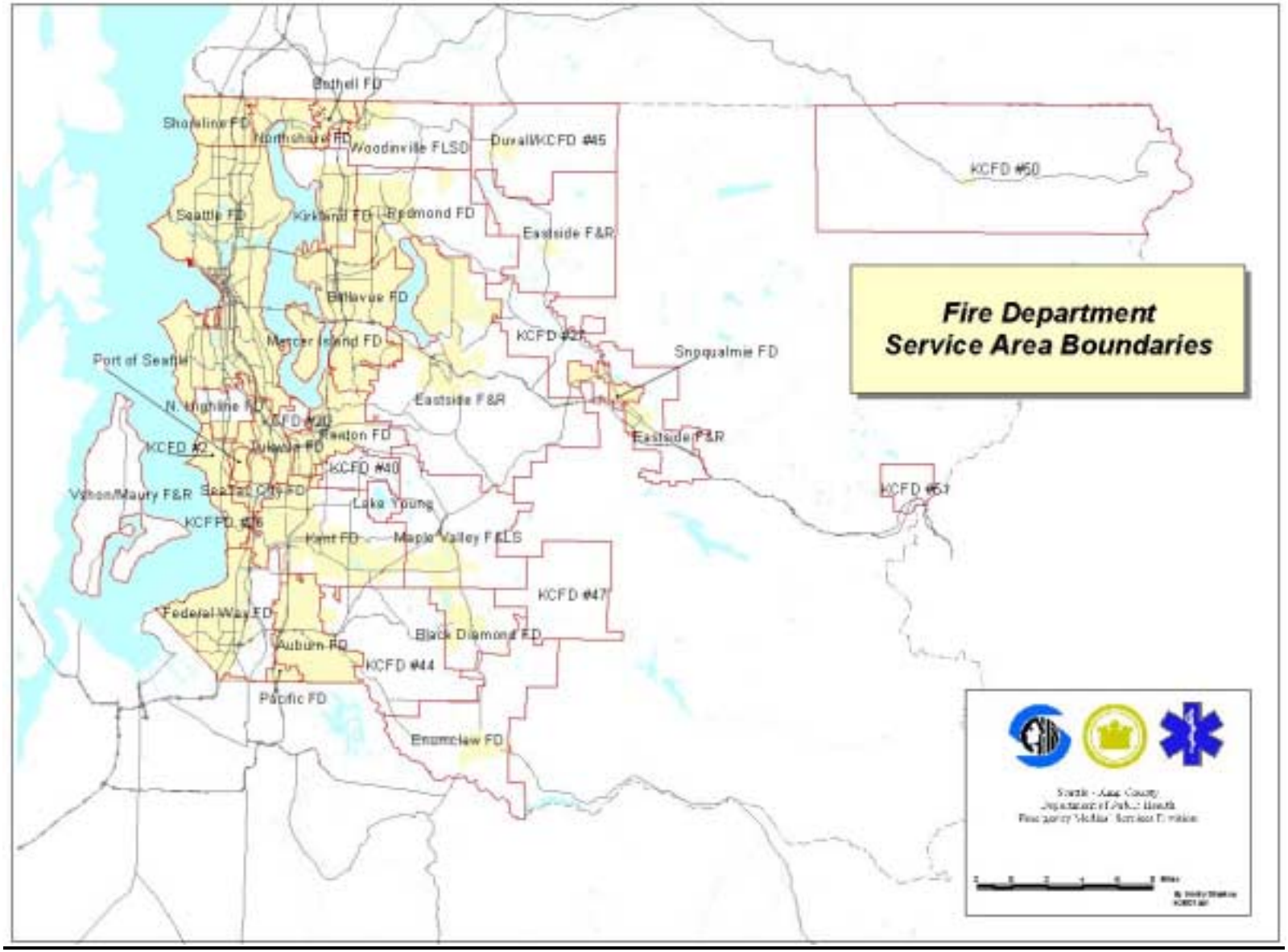
The 1998-2001 EMS Financial Plan summarizes actual and projected revenues, and expenditures for core EMS Division programs and services, major strategic initiative directions and other additions. The EMS Financial Plan shows the current status of the undesignated fund balance in relationship to a target fund balance. The target fund balance is the equivalent of one month's operating costs for EMS activities.

There are a couple areas in the Financial Plan that requires some additional explanation. First, expenditures for core programs and services are separated from EMS strategic initiatives in order to show the amount allocated to each strategic effort in budget 2001. The amount allocated to strategic initiatives follows the recommendations in the EMS 1998-2003 Strategic Plan. Second, during the 2001 budget process, the EMS Division has proposed reserved $560,580 for supplemental ordinances, as well as contingencies for anticipated labor contract settlements.

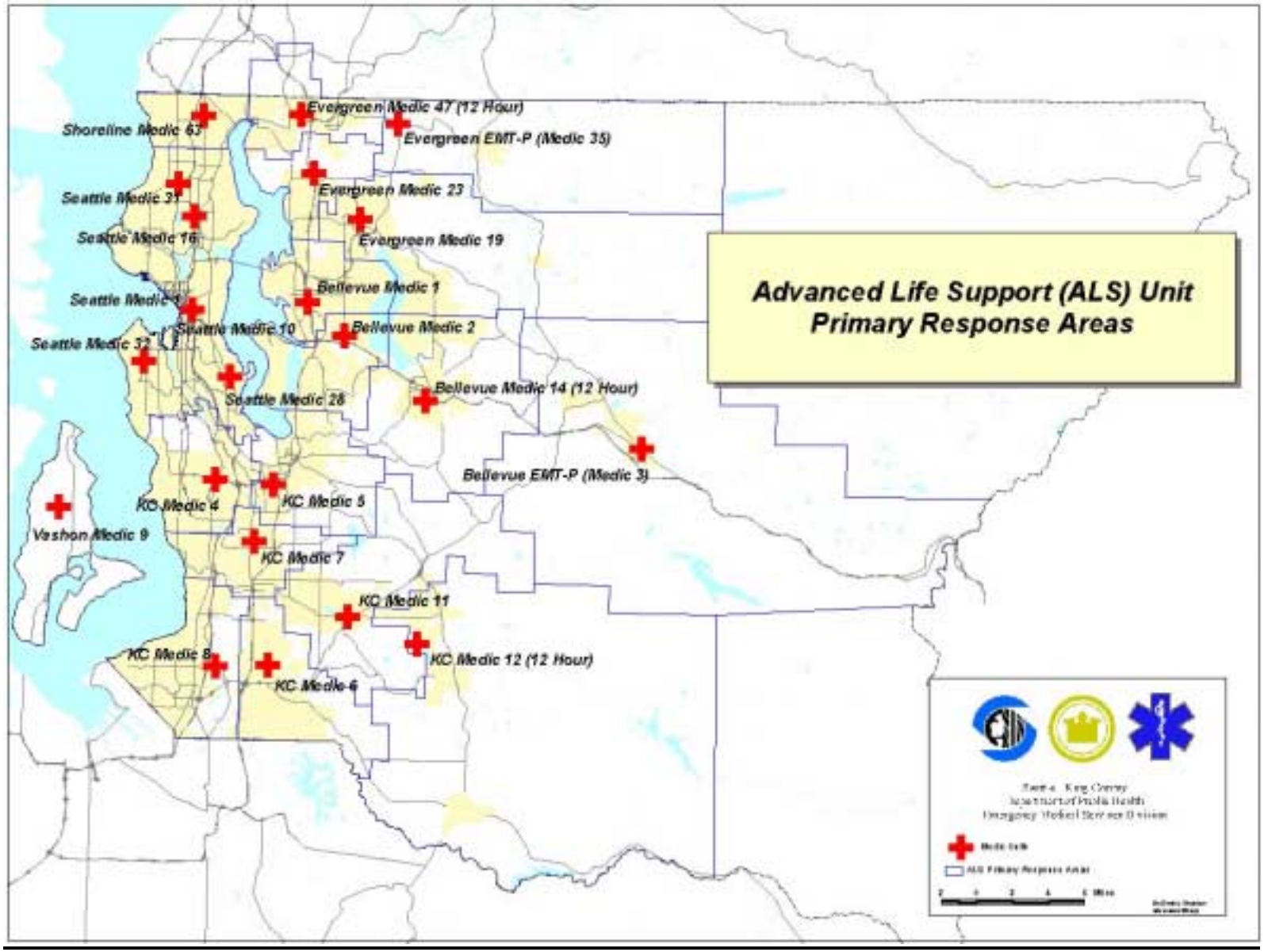
F. Recommendations for Fund Balance

The EMS Financial Plan currently projects a fund balance in 2001 that is on target with the fund balance required in the EMS fund. The EMS Division will continue to monitor revenue collections and expenditures on a monthly basis to accurately track the fund balance.

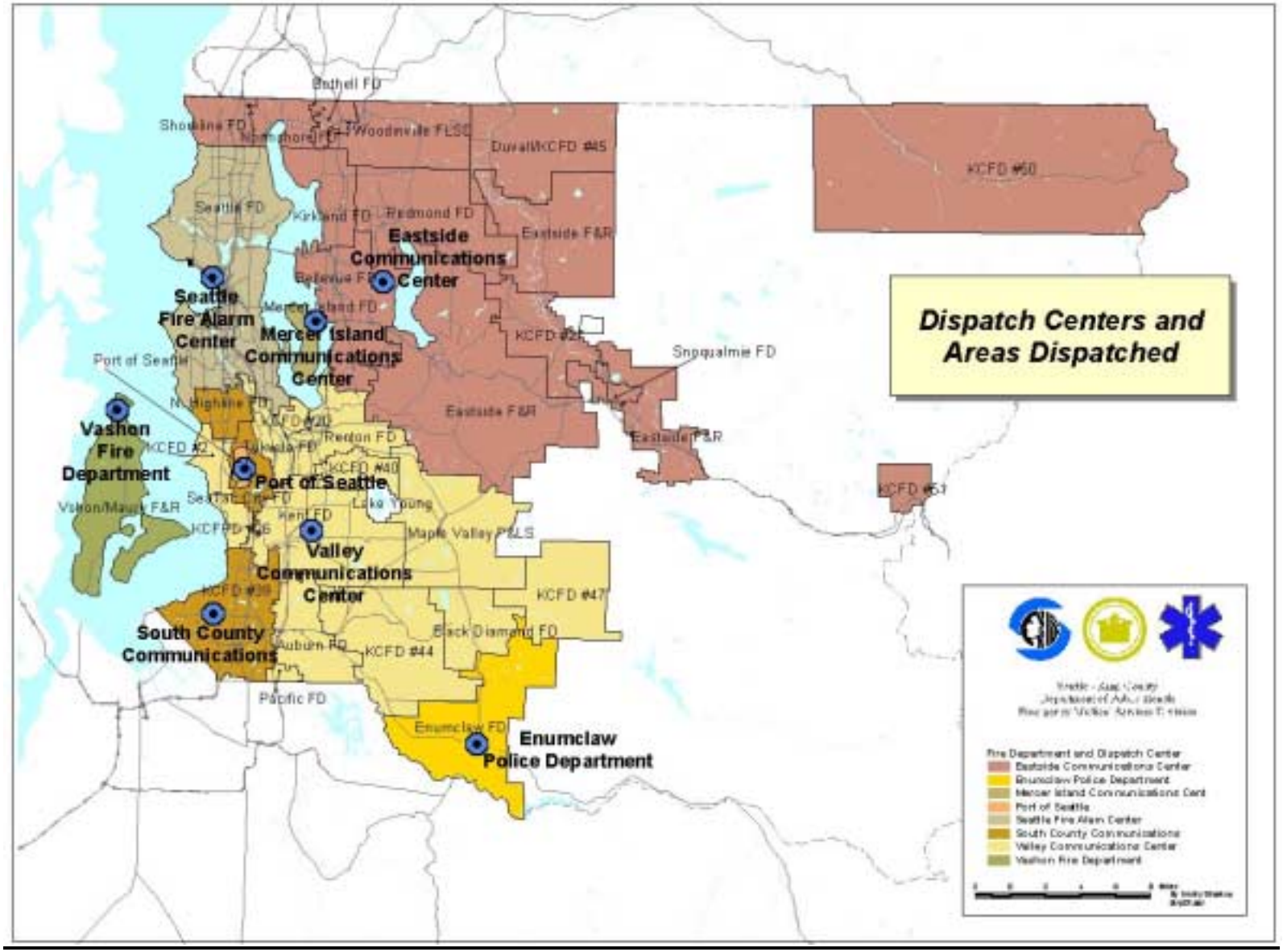
Appendix A: Regional Map of the Basic Life Support (BLS) Provider Areas



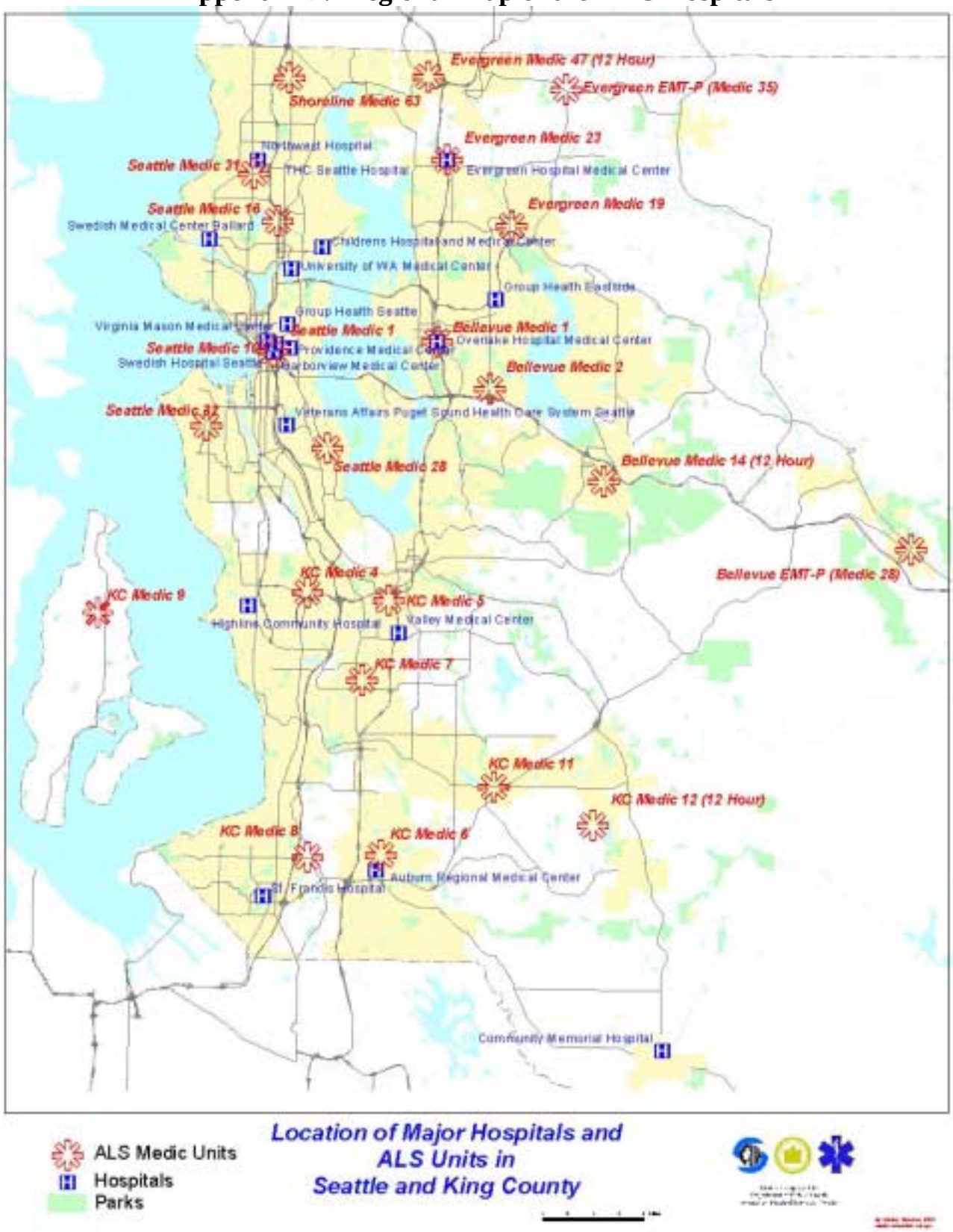
Appendix B: Regional Map of the Advanced Life Support (ALS) Provider Areas



Appendix C: Regional Map of the EMS Dispatch Center Service Areas



Appendix D: Regional Map of the EMS Hospitals

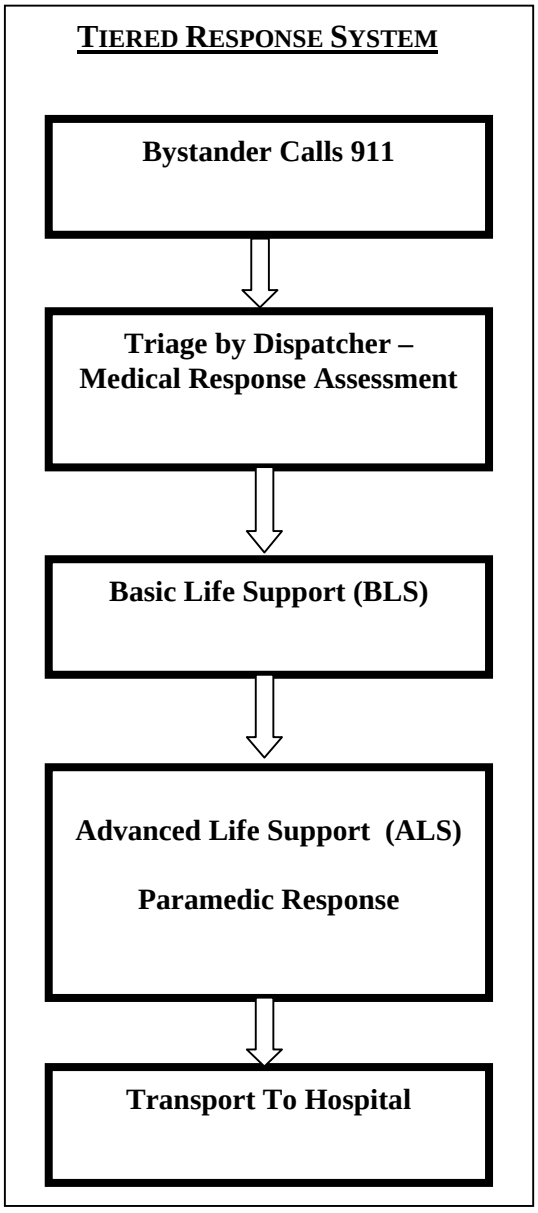


Appendix E: The EMS/ Medic One Tiered System

The **Emergency Medical Services/Medic One system** provides an internationally regarded regional service to the citizens of Seattle and King County, responding in an area of over 2,000 square miles and serving a population of approximately 1.7 million. The EMS/Medic One system operates in a coordinated partnership between King County, various cities, fire districts, private ambulance companies, and others involved in providing high quality of pre-hospital medical care. The EMS response system is tiered to assure that 911 calls receive effective medical care by the most appropriate care provider.

There are several **major components** in the regional tiered EMS/Medic One system and they are described below:

- **Access:** Bystander accesses the EMS system by calling 911.
- **Dispatcher Triage:** Calls to 911 are received and triaged by trained professional dispatchers in eight dispatch centers throughout King County. Dispatchers use the Criteria Based Dispatch (CBD) Guidelines to provide uniform triaging to callers.
- **Basic Life Support (BLS) services:** BLS personnel provide the first level of response and are staffed by firefighters trained as Emergency Medical Technicians (EMTs) from one of the 34 fire district and departments in the county. BLS units arrive at the scene in an average of about six minutes.
- **Advanced Life Support (ALS) services**: ALS services are provided by six paramedic agencies throughout the county and respond to patients with more critical or life-threatening injuries and illnesses. About 35% of all EMS responses receive a paramedic response.
- **Transport to Hospitals:** Some patients require additional medical care and are transported to hospitals for further attention.



Appendix F: 2001 EMS Advisory Committee Listing

Name	Representation	Title/ Organization
Tom Hearne, Chair	Emergency Medical Services Division	Manager
Bob Berschauer	Ambulance Service	Director of Operations, American Medical Response
Al Church	BLS in Cities > 50,000 - Federal Way	Chief, Federal Way Fire Department
Michael Copass, M.D.	Medical Program Director - Seattle	Seattle Medic One
Chris Fischer	Dispatch	Director, Valley Comm. Center
Phil Grieb	ALS Providers - Evergreen Medic One	Acting Director
Tom Gudmestad	ALS Providers - King County Medic One	Acting Manager
Steve Hamilton	BLS in Cities > 50,000 - Kent	Acting Chief, Kent Fire Department
Roger Hershey	KC Fire Commissioner's Assn. - Urban	Fire Commissioner, Federal Way
Keith Keller	Labor - ALS	Paramedic, King County Medic One
Jon Kennison	KC Fire Commissioner's Assn. - Rural	Fire Commissioner, Shoreline
Pete Lucarelli	ALS Providers - Bellevue Medic One	Chief, Bellevue Fire Department
Gary Morris	ALS Providers - Seattle Medic One	Chief, Seattle Fire Department
Jack Murray, M.D.	EMS Medical Program Director	Medical Program Director
Steve Olmstead, M.D.	Chair, Medical Directors' Committee	Medical Director, King County Medic One
Dr. Alonzo Plough	Public Health - Seattle & King County	Director
J.B. Smith	ALS Providers - Shoreline Medic One	Chief, Shoreline Fire Department
Lee Wheeler	BLS in Cities > 50,000 - Renton	Chief, Renton Fire Department
Jim Wilson	ALS Providers - Vashon Medic One	Chief, Vashon Fire Department
Not filled at this time	Citizen Representative	
Not filled at this time	Health Care System	
Not filled at this time	Labor - BLS	

Appendix G: EMS Division Revenue/Expenditure Summary
Financial Plan 1999 through 2002*

	1999 Actual	2000 Actual	2001 Estimate	2002 Proposed
BEGINNING FUND BALANCE:	**$(7,800,743)**	**$5,252,825**	**$(30,779)**	**$2,896,443**
REVENUES:				
Property Taxes	28,078,392	29,289,141	29,948,016	32,155,000
Other Revenue (includes Interest Income)	880,907	734,277	490,117	433,000
General Fund (CX)	375,000	375,000	375,000	375,000
6 month interim funding	-	-		
TOTAL REVENUES	**$29,334,299**	**$30,398,418**	**$30,813,133**	**$32,963,000**
EXPENDITURES:				
CORE SERVICES				
Paramedic Services	(13,312,446)	(15,472,469)	(15,740,120)	(20,195,889)
Basic Life Support	(7,775,074)	(8,725,386)	(8,277,993)	(8,526,333)
EMS Division Regional Services	(3,118,645)	(3,388,210)	(4,285,387)	(4,677,773)
SUBTOTAL	**$(24,206,165)**	**$(27,586,065)**	**$(28,303,500)**	**$(33,399,995)**
NON-OPERATING FUND ACTIVITIES				
To Reserve for Encumbrance Carryover	(1,179,496)	(192,203)		
From Reserve for Encumbrance Carryover	562,010	1,179,496	192,203	
To Reserve for Reappropriation Designation	(293,000)	(225,386)		
From Reserve for Reappropriation Designation		293,000	225,386	
Year end revenue accrual for GAAP Accounting Adjustment		(2,309)		
Equity Transfer from/(to) TAN Fund 1191	8,835,920	(9,148,553)		
SUBTOTAL	**$7,925,434**	**$(8,095,957)**	**$(417,589)**	
ENDING FUND BALANCE:	**$5,252,825**	**$(30,779)**	**$2,896,443**	**$ 2,459,448**

*Notes: 2001 Estimate is from 2nd Quarter Report. 2002 Budget includes changes through 8/31/01. 2002 Revenues does not include fund balance or possible additional CX contributions. TAN Fund 1191 was a sub-fund of Fund 1190 and was used for Tax Anticipation Notes proceeds. Additional CX funding is being considered to help support paramedic services provided by King County Medic One.

Appendix H: Contact Information

Mailing Address: **King County Emergency Medical Services**
Public Health – Seattle & King County
999 3rd Avenue, Suite 700
Seattle, WA 98104-4039
(206) 296-4693 (206) 296-4866 (fax)

Web Address: http://www.metrokc.gov/health/ems

Specific Program Contacts:

King County Medic One http://www.metrokc.gov/health/medicone/	(206) 296-8550
BLS/EMT Training and Education Program http://www.metrokc.gov/health/ems/training.htm	(206) 296-4861
CPR/AED Training Programs http://www.metrokc.gov/health/ems/aed.htm	(206) 205-5582
Emergency Medical Dispatch Programs http://www.metrokc.gov/health/ems/emdprogram.htm	(206) 296-4956
Injury Prevention and Public Education Programs http://www.metrokc.gov/health/ems/community.htm	(206) 296-0202
Medical Control http://www.metrokc.gov/health/ems/quality.htm	(206) 296-0201
Strategic Initiatives http://www.metrokc.gov/health/ems/planning.htm	(206) 205-3290
Regional Data Collection Project http://www.metrokc.gov/health/ems/planning.htm	(206) 205-1056
Center for the Evaluation of EMS (CEEMS) http://www.metrokc.gov/health/ems/CEEMS.HTM	(206) 296-4862
Trauma Registry http://www.metrokc.gov/health/ems/trauma.htm	(206) 205-6293
Emergency Preparedness http://www.metrokc.gov/health/ems/emsprep.htm	(206) 296-0203